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NATIONAL CONFERENCE ON WATERCRAFT WASTE DISPOSAL HELD AT ANN ARBOR, MICHIGAN ON MAY 31 - JUNE 1, 1966

NATIONAL SANITATION FOUNDATION
ANN ARBOR, MICHIGAN

PREPARED FOR
PUBLIC HEALTH SERVICE
WASHINGTON, D.C.

1966

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NATIONAL CONFERENCE ON WATERCRAFT WASTE DISPOSAL

1966

Conducted by
National Sanitation Foundation
With Assistance of
U.S. Public Health Service
and
Tennessee Valley Authority

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Proceedings of the 1966 conference conducted by the National Sanitation Foundation are presented. The conference was held to review the effluent criteria recommended by the Interdepartmental Committee on Sewage and Waste Disposal from Vessels established by the Division of Environmental Engineering and Food Protection, Public Health Service, and to establish criteria for the evaluation of the performance of devices to treat wastes to render them acceptable for discharge from pleasure type watercraft in accordance with the effluent criteria.

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NATIONAL CONFERENCE

ON

WATERCRAFT WASTE DISPOSAL

Ann Arbor, Michigan

May 31 - June 1, 1966

Conducted by

National Sanitation Foundation

With Assistance of

U.S. Public Health Service

and

Tennessee Valley Authority

The research upon which this publication is based was performed pursuant to Contract No. PH 86-66-166 with the U. S. Public Health Service, Department of Health, Education and Welfare

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Foreword

The National Conference on Watercraft Waste Disposal was convened in partial fulfillment of contracts with the U.S. Public Health Service and with the Tennessee Valley Authority. With the publishing and distribution of this report, which includes the proceedings of the National Conference, the National Sanitation Foundation discharges its immediate responsibilities under the terms of the agreements with the two Federal agencies.

In order to provide understanding as to the nature and scope of this report, the following information is excerpted from the U.S.P.H.S. Contract:

I. Project Objectives

A. To review the effluent criteria recommended by the Interdepartmental Committee on Sewage and Waste Disposal from Vessels established by the Division of Environmental Engineering and Food Protection as they pertain to small pleasure type watercraft.

B. To establish criteria for the evaluation of the performance of devices designed to treat wastes so as to render them acceptable for discharge from pleasure type watercraft in accordance with the criteria established under "A".

C. To provide for the dissemination of the information developed to all health agencies and other interested agencies and persons.

II. Plan of Operation

A. A conference will be held at the National Sanitation Foundation, Ann Arbor, Michigan, for the purpose of reviewing the criteria developed by the Interdepartmental Committee on Sewage and Waste Disposal from Vessels and to establish criteria to evaluate the performance of existing devices to treat wastes from pleasure type watercraft. The conferees would be public health regulatory officials, representatives of pleasure type watercraft owner groups, manufacturers, and others having a special knowledge of watercraft waste disposal and water pollution control. The conference would last two or three days and would involve not to exceed 30 persons.

B. In preparation for such a conference the National Sanitation Foundation would:

1. Review and compile the existing laws, rules, and regulations pertaining to watercraft waste disposal.

2. Review and report on the various devices presently in use for the handling and disposal of wastes from watercraft.

C. During the conference the National Sanitation Foundation would:

1. Furnish meeting rooms and facilities for the conferees.

2. Provide the conferees with the information developed as a result of the pre-conference reviews and studies, above.

3. Record the proceedings of the conference.

4. Provide secretarial and duplicating services as required.

D. Following the conference:

1. The proceedings of the conference will be published including the information developed during the pre-conference activities above, and such illustrative materials as required.

2. Health agencies, and other interested agencies, groups, and persons will be supplied with the conference proceedings.

III. Reports

A. Following the conference a final report of the proceedings shall be published including the information developed during the pre-conference activities and such illustrative materials as required.

B. Copies of the proceedings shall be furnished the contracting Federal agencies. Health agencies, and other interested agencies, groups and persons will also be supplied with the proceedings.

In publishing and distributing this report, therefore, the National Sanitation Foundation acknowledges with appreciation the support provided by the U.S. Public Health Service and the Tennessee Valley Authority.

Steps are already under way to implement the recommendations of the National Conference. NSF is developing a group of knowledgeable persons representing the multiple interests involved in the problem of watercraft waste handling and disposal. These persons will make up the Joint Committee which will be the group with primary responsibility for devising solutions for the many complex issues involved. NSF will make every effort to keep all parties at interest advised of progress made in this undertaking.

October 1966

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Organization

Background:

In the years following World War II and particularly since the early 1950's, there has been an astonishing increase in the use of pleasure watercraft for recreational purposes. With the rise in prosperity and the greater availability of leisure time for recreational pursuits, growing numbers of the population have turned to water based sports for relaxation and enjoyment. Swimming, water skiing, skin diving, fishing, racing of sail and powerboats, etc., have offered variety and interest in recreation. Frequently such activities have presented opportunities for family group participation and for guest entertainment which most sports do not afford.

As boats became more luxurious, more time was spent aboard them, and longer trips were made away from docking areas, greater emphasis was placed upon comfort and "livability". Bunks, galleys and heads (shipboard toilets) were increasingly provided. In fact, for human accommodation, the head took precedence over the bunks or galley and when only one of the three facilities could be provided on the craft because of space limitations, it was usually the head which was supplied. Needless to say the plumbing was rudimentary and excreta deposited in the bowl was easily and quickly discharged overboard simply by working a pump handle for a few strokes.

Now, in the latter 1960's, hundreds of thousands of pleasure watercraft - sailboats, powerboats, houseboats - are operated on the lakes, inland waterways and estuaries of this country. A large number of such craft have one or more heads on board. During the boating season many boat owners live on their boats during weekends, holidays and vacations. Some may live on their boats (particularly houseboats) during the entire season. Even those owners who do not have sleeping accommodations on their boats take long daytime cruises. Many owners will also use their craft for social gatherings while docked.

Not only, therefore, are wastes discharged from pleasure craft at marinas and docks and, of course at random points during cruises, but at points of congregation

around popular offshore swimming and fishing sites, and at regattas and other special boating events, where large numbers may be anchored for many hours at a time. During such periods boat occupants engage in a variety of water contact sports, fishing, partying, and even boat cleaning. At such points the waters may be subjected to intensive local waste discharges with resulting contamination of boat hulls and sports equipment and the likely possibility of swallowing of contaminated water by swimmers, skin divers and water skiers.

It has, therefore, become increasingly important that some means of watercraft waste treatment and control be developed which will either effectively eliminate the discharge of waste from boats (except to adequate dockside facilities) or which will adequately treat the waste so as to render it acceptable for discharge to surrounding waters. The quest for development of effective devices and programs of appropriate control has been joined by health and water quality regulatory agencies, manufacturers of waste treatment devices, commercial boating interests, recreation based industry and agencies, and boat users.

Several difficult problems have beset efforts to promote the development and use of waste handling devices for watercraft. There have generally been no regulations governing the use of boats in various waters and the discharge of waste from the boats into the waters. There have been no standards for the sanitary quality of treated wastes acceptable for overboard discharge. There have been no generally acceptable performance criteria for the evaluation of devices for the handling and treatment of wastes. Despite efforts of some forward looking officials, boating and recreational interests, and enterprising manufacturers, no program of generalized effective control had been established as of early 1966.

Pages 45-52 of this report set forth a series of proposals or resolutions adopted by the Conference of State Sanitary Engineers, Conference of Municipal Public Health Engineers, American Public Health Association, Association of State and Territorial Health Officers, Ohio River Valley Water Sanitation Commission, and the U.S. Public Health Service, over a period of more than three years, urging that appropriate

corrective and control procedures be developed before serious health and water pollution problems resulted. These efforts languished for lack of any strong coordinating interest willing, and with necessary fiscal resources, to undertake the task.

In the fall of 1965, as a result of interest generated by the aforementioned resolutions, representatives of the Division of Environmental Engineering and Food Protection of the U.S. Public Health Service contacted the National Sanitation Foundation to ascertain its interest and willingness to undertake the task of promoting and coordinating a program which could lead to the development of performance criteria for the testing and certification of waste disposal devices for watercraft. The Division of Environmental Engineering and Food Protection of the Public Health Service had already been engaged, as a phase of its own legal responsibility, in the promulgation of proposed regulations for the treatment of wastes from all kinds of vessels and watercraft using the coastal and inland waters of the United States. The proposed U.S.P.H.S. policy statement is presented on pp.

The National Sanitation Foundation agreed to undertake this venture and entered into contract with the U.S.P.H.S. to do so. The pertinent details of this contract are set forth in the foreword of this report. A collateral contract was entered into with the Tennessee Valley Authority (which also has strong interest in the control of wastes from watercraft because of its large water quality management responsibilities on TVA lakes) to enable funding of the National Conference on Watercraft Waste Disposal and the publication of this report.

Objectives of the Conference:

Although included in the material of the foreword, the conference objectives are restated here:

A. To review the effluent criteria recommended by the Interdepartmental Committee on Sewage and Waste Disposal from Vessels established by the Division of Environmental Engineering and Food Protection as they pertain to small pleasure type watercraft.

B. To establish criteria for the evaluation of the performance of devices designed to treat wastes so as to render them acceptable for discharge from pleasure type watercraft in accordance with the criteria established.

C. To provide for the dissemination of the information developed to all health agencies and other interested agencies and persons.

Conference operation:

The conference was convened with the group of carefully selected, widely representative participants listed on pp.109-111. Background material, including the report of the U.S.P.H.S. Interdepartmental Committee, was provided all participants. The first day of the conference was devoted to the presentation of formal statements by participants who wished to place positions before the conference. Verbatim transcripts (author edited) of all formal statements are presented in the appendix of this report (pp. 55-108).

The second day of the proceedings was devoted to discussion of positions and issues of greatest concern to the participants. Conclusions of the conference were formulated through such discussion.

The following three parts of this report present an interpretive summary, prepared by NSF Staff, of the positions which were stated and the conclusions which appeared to have been reached. Every effort has been made to reflect expressions of all interests and to give proper weight to the sense of the meeting as reflected by the participants.

Resume of Positions Developed by the Conference

Regarding nature of the problem and need for control:

There was a general concensus of conference participants that a problem is presented by current practice in the disposal of toilet wastes from pleasure watercraft. Agreement did not appear, however, with regard to the extent to which current toilet waste disposal practice presented a pollution problem interfering with water supply,

recreational, esthetic or other established uses of the waters of lakes, streams or estuaries in the United States. Although a few pilot studies showed trends of increasing values for the coliform index, such effects were essentially confined to docks, marinas and anchorages where large stationary boat and population concentrations were maintained over extended periods of time. Such concentrations might or might not be in the immediate areas where water contact sports were enjoyed. There appeared to be concurrence that a serious health, recreational, or esthetic problem has not yet been demonstrated but a worsening trend was acknowledged. The need for preventive rather than corrective pollution control action was indicated as needed and a general willingness expressed to undertake it before a serious problem is created.

The boating and recreational interests strongly emphasized that high quality water is not only essential to the recreational use of boats and water contact sports but is equally essential to the economic well-being of the pleasure boat industry and recreation oriented industry. These interests also noted the even more serious litter problem due to improper disposal of garbage, refuse and galley waste from pleasure craft.

Regarding need for expression of definitive policy from regulatory agencies:

With regard to the technical aspects of dealing with the watercraft waste disposal problem, the most frequently recurring note centered on the need for basic policy decisions and alternatives of approach to enable problem solving attack. For example, it was questioned whether a single standard would be reasonable under all water quality and boat usage conditions encountered. Several public health agency representatives pointed out the desirability of categorizing the variety of public health, recreational and esthetic interests which should be anticipated and protected. This same position was advanced in a slightly different way in the expression that there should be a categorizing of the variety of waters (according to use) into which discharges may or may not be made from pleasure craft. Such approach suggests a value scale against which the effectiveness of technological solution (and devices) can be measured.

Policy, it was suggested, might take several forms depending upon requirements of the situation. Public health and esthetic considerations might constitute one scale or frame of reference; water uses might constitute another; a zero index to a number of any given magnitude for an effluent standard might represent yet another; and use of devices which accomplish no discharge versus others which produce discharges of effectively controlled effluents offer still another. The question was repeatedly asked, how can this variety of circumstances be dealt with effectively from a control standpoint in the absence of decision and definitive policy pronouncement by the regulatory agencies?

Representatives of industry offering a variety of toilet waste handling devices voiced a strong plea for an expression of performance expected of equipment and devices by the regulatory agency representatives - or standards against which performance of devices can be developed. Manufacturers, in asserting a right to expect guidelines as to what is expected of them in equipment performance, contended that industrial technology capable of producing any results required by today's society is now available. Boating interests (industry and users) also voiced the request, what do you expect us to do, what standards do you expect us to meet in protecting the quality of our waters?

Such requests were not confined to issues of public health and water quality. Since a variety of equipment utilizing different waste handling methods are now offered, issues of the safety of usage of the devices aboard watercraft are also involved. Policy pronouncements by the appropriate regulatory officials on safety issues are equally needed.

Conference participants appeared mutually resolved that the ultimate mechanism of approach proposed for dealing with the overall problem of waste disposal from watercraft must deal with these policy issues as first steps.

Regarding the accepted need for devices, standards, etc.:

Upon recognition and acceptance of the nature of the problem to be dealt with, and in expectation of suitable policy determination by regulatory agencies, technical issues of standards and devices can be set up for direct attack and solution. Representatives of regulatory agencies pointed out to the members of industry, however, that they will have to make their own decisions as to how widely competitive (or applicable) they will desire any one of their devices to be. It would seem only reasonable to expect that standards as ultimately established will vary according to locality, water usage and perhaps even the concentration of watercraft in a given locale. Industry must then make the decision as to whether it can best meet competitive demands by offering a "no-effluent" versus a "controlled-effluent" device for various conditions of use.

Representatives of industry, in indicating a willingness to proceed with further equipment development as soon as suitable performance standards are made available, expressed a concern that currently suggested standards are less demanding than industry is now capable of attaining. This argument was advanced to illustrate the availability of the technological capacity of industry but which must be matched, however, against specified needs of society in order to be utilized with maximum effectiveness.

Regarding objectivity and consistency in approach and administration of standards:

All conference participants were agreed on the need for fair and uniform regulations. Uniformity and reciprocity in adoption and acceptance of standards will be essential on interstate streams and waterways. To be effective, field application, policing and enforcement of standards must be uniform.

There must be uniform procedures for testing and certifying devices. Evaluation must be accomplished against accepted performance requirements.

It will, of course, be necessary to comply with requirements of the Federal Water Pollution Control Act. On the other hand, assistance from the Federal authorities will

be required in determining what standards for watercraft waste handling will be interpreted as acceptable under the Federal Act.

Standards of acceptability for devices should include not only the dependability of the equipment itself but the availability of maintenance, repair and replacement service. There should be provision also for the listing of equipment and devices which have met specified qualifications and have been certified.

Regarding recommendations in proposed policy prepared by U.S. Public Health Service:

The "Proposed Policy on Sewage and Waste Disposal from Vessels" prepared by the Division of Environmental Engineering and Food Protection of the U.S. Public Health Service was made available to the conference participants and discussed or referred to by several speakers. At no time was there any inclination on the part of the assembly to address itself to the waste disposal problem presented by vessels or watercraft in the classification of 41 or more passengers and crew. Although, by common consent, the scope of the conference was confined to the watercraft size classification of 40 or less passengers and crew, there was obvious reluctance of participants to critically examine the effluent standards recommended in the U.S.P.H.S. report. This was due, in part at least, to the following reasons:

1. With the exception of industry representatives which were producers of macerator-bactericidal devices and had already endeavored to comply with the P.H.S. recommended standard, the industry group was not receptive to the idea of a single number standard. Rather, industry suggested, it is much more important to have policy pronouncements from the regulatory officials as to the circumstances under which, indeed, any effluent discharge might be made as well as other situations involving varied effluent or water quality conditions. The manufacturers of no-discharge devices contended it was important for makers of any type of device to

first know the limiting circumstance under which waste handling devices would be used prior to agreeing upon any effluent standard, be it a 0, 240 or 1,000 coliform index or other.

2. Regulatory agency representatives seemed to be of the opinion it would be unwise (premature) to fix on any specific index or number as a standard until more is known of what will be required as water quality standards under the Federal Water Pollution Control Act. Further, that careful consideration must be given to the need for categorizing the variety of public health and other water quality interests prior to determining upon a specific water quality standard. Only after such determinations are made will it be practicable to attempt to set effluent standards for devices.
3. There appeared to be reservation on the part of representatives of regulatory agencies as well as those of industry that until it was definitely worked out and accepted how and by whom testing of devices for compliance with any standard would be accomplished, adoption of the standard(s) should be deferred.

Regarding designation of organizations responsible for developing standards for devices, and the testing and certification of devices:

At the outset of the conference there appeared to be a substantial difference of opinion between the representatives of the regulatory agencies on the one hand and of the manufacturers and boating interests on the other as to the organization which should be assigned the responsibility for developing performance standards for watercraft waste handling devices and carrying out the necessary testing and certification program. The manufacturer and boating group appeared of the opinion that since watercraft were involved in the waste handling problem, the development of all standards

for devices should be assigned to the American Boat and Yacht Council with the testing procedures and certification program to be developed and carried out by the Yacht Safety Bureau. A small exception to this latter was expressed by representatives of no-effluent devices who suggested that safety testing and certification should also be accepted from other qualified organizations.

Representatives of the regulatory agencies were very forthright and positive in their assertions, however, that they would not agree to, or accept, any organization not having a definite public health orientation as one responsible for developing standards for devices, or the testing and certification of devices, on factors concerned with public health or water quality. On the other hand, they asserted, safety factors involved in the use of waste handling devices on watercraft were of such importance that they should be made the responsibility of a safety oriented organization.

Conference participants did not continue at impasse on this issue. Understanding was achieved that a dual approach should be taken. Factors concerned with public health and water quality would be designated as the responsibility of an organization with demonstrated competence in that area. Factors concerned with safety would be made the responsibility of an organization with demonstrated competence in that field. Provision should be made to achieve effective coordination between both organizations in the development and implementation of their respective responsibilities.

Conclusions

Regarding need for and development of standards:

1. There is immediate need for the development of performance standards relating to the health, safety and water quality control aspects of devices for the disposal of toilet wastes from pleasure watercraft;

2. Processes should be initiated to develop standards, and testing and certification of devices under such standards, to apply to the size classification of pleasure and working watercraft with 40 or less passengers and crew;
3. Regulatory agencies with responsibility for health and water quality control aspects of streams, lakes and estuaries of the United States should promptly enunciate public policy with regard to water quality standards or criteria which will govern the use of boats on various bodies of water, the disposal of wastes from boats on such bodies of water, and the performance of devices provided for the holding or treatment and disposal of wastes under specified circumstances;
4. Regulatory agencies with responsibility for watercraft safety should promptly enunciate public policy with regard to safety standards or criteria which will govern the use of various types of waste handling or disposal devices (particularly the no-effluent type) on pleasure or working watercraft under specified conditions and circumstances.

Regarding health and water quality aspects of standards development, testing and certification:

1. Responsibility for the development of performance standards for watercraft waste disposal devices, and the testing and certification of such devices in regard to matters of health and water quality must be assumed by an organization which is public health oriented.

Regarding boat safety aspects of standards development, testing and certification:

1. Responsibility for the development of performance standards for watercraft waste disposal devices, and the testing and certification of such devices in regard to matters of boat safety must be assumed by an organization which is safety oriented.

Regarding coordination of effort toward testing and certification of devices:

1. Cooperation and coordination between the organization(s) responsible for health and water quality aspects, the organization(s) responsible for the safety aspects, regulatory officials, manufacturers, and boating interests will greatly facilitate accomplishment of the ultimate testing and certification of devices. It is the earnest hope and expectation of the conference participants that such a pattern of operation will prevail.

Regarding regulatory implementation at Federal and State levels:

1. The conference accepted and supported the recommendation of the Association of State and Territorial Health Officers that each State: establish a public educational program regarding control of waste disposal from watercraft; encourage adoption of uniform rules and regulations regarding such practice; and promote and support the establishment of an instrumentality for testing and evaluating devices.
2. Regulatory officials at all levels of government should promote the development of guidelines for the application and administration of standards for waste disposal from watercraft which can be generally accepted throughout the United States.

Recommendations

Charge to National Sanitation Foundation:

1. (As the only formal action of the conference, the following motion was offered and passed):

   "Moved that the National Sanitation Foundation be adopted as the mechanism through which public health criteria for waste treatment, holding and

disposal devices for watercraft under 40 capacity, including pleasure craft, should be pursued."

(In discussion of the above issue, the following additional point was made):

2. The National Sanitation Foundation be requested to coordinate its activities concerned with the health and water quality aspects of this undertaking with that of the organization(s) concerned with safety aspects; that every effort be made to cooperatively involve appropriate representatives of regulatory agencies at all levels of government, manufacturers of devices, boating interests, recreation industry, users, etc. as work proceeds with standards development, testing and certification; and that implementation of the total objective be undertaken as expeditiously as possible.

DIGEST OF STATE LAWS FOR SANITARY FACILITIES FOR BOATS AND MARINAS

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Compiled by

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Program Planning Officer for Boats and Marinas
Division of Water Supply and Pollution Control
U.S. Public Health Service
Washington, D.C.

March 15, 1965

ALABAMA
Ch. 574, Laws of 1965
House Bill #132

Creates a Water Improvement Commission. The State Department of Public Health is the administrative and disbursing agent for the Commission.

The Commission is to study and investigate all problems concerned with the improvement and conservation of the waters of the State.

The Commission is to make studies and research and to prepare a program all of which shall pertain to the purity and conservation of the waters of the State, or to the treatment and disposal of sewage, industrial wastes or other wastes which may be cause of pollution, which program shall be intended to result in the reduction of pollution of the waters of the State.

The Commission is to propose remedial measures for abatement of such pollution.

It is the duty of the Commission to exercise general supervision over the administration and enforcement of all laws relating to pollution of the waters of the State.

When the Commission determines that a person is violating or about to violate any of the provisions of the Act or any rule or order of the Commission promulgated thereunder, the Commission may notify such person of such determination. Within such time as specified in the notice such person shall file with the Commission on a full report showing steps that have been taken to control such discharges of pollution. Thereupon, the Commission may make such orders as it deems necessary.

Authorizes the Commission to establish standards of quality for any waters in relation to their reasonable and necessary use as shall be in the public interest. The quantity of pollution existing in an effluent at any time shall be subject to the control of the Commission if it creates a health hazard.

Authorizes the Commission to issue permits for the discharge of sewage and industrial wastes and other wastes stipulating the conditions under which discharge may be permitted.

The Commission may issue reasonable orders directing particular persons responsible for pollution to secure within a reasonable time such operating results toward the control or abatement of pollution as the Commission may prescribe.

Violation of the Act or orders of the Commission are deemed guilty and are subject to a fine.

(Approved 8-26-65)
(Act Effective 3 mo. from approval)

ARIZONA
Arizona Revised Statutes Annotated

1963 Cumulated Pocket Part
Chapter 3 - Boating and Water Sports

Section 5-311:

No person shall dump, deposit, place, throw or leave refuse, rubbish, debris, filthy or odoriferous objects, substances or other trash on any waterways or the shorelines of any waterways of the State.
(Added laws of 1958, Chapter 100, Section 1.)

Section 5-312:

A. All peace officers of the State, counties and cities shall enforce the provisions of this Article.

Section 5-313:

Any person who violates this Article is guilty of a misdemeanor punishable by a fine of not more than $300.00, by imprisonment for not more than 90 days, or both. (Added laws of 1958, Chapter 100, Section 1.)

ARKANSAS
Regular Session
Act 147, Laws 1965
House Bill No. 382

AN ACT to regulate marine toilets and disposal of sewage from boats.

Be It Enacted by the General Assembly of the State of Arkansas:

Section 1. Definitions. As used in this Act, the following words shall have the following meanings:

(a) "Boat" means any vessel or watercraft moved by oars, paddles, sails, or other power mechanism, inboard or outboard, or any other vessel or structure floating upon the water whether or not capable of self-locomotion, including but not limited to house boats, barges and similar floating objects;

(b) "Marine toilets" means any toilet on or within any boat.

(c) "Waters of the State" means all streams, lakes, marshes, ponds, water courses, waterways, irrigation systems, drainage systems, and all other bodies or accumulations of water, natural or artificial, public or private, which are contained within or flow through the territorial jurisdiction of the State.

(d) "Sewage" means all human body waste.

Section 2. Acts Prohibited. No marine toilet on any boat, operated upon waters of the State, shall be so constructed and operated as to discharge any inadequately treated sewage into waters of the State directly or indirectly. No boat shall be equipped to permit discharge from or through its marine toilet, or in any other manner, of any inadequately treated sewage at any time into waters of the State, nor shall any container of inadequately treated sewage be removed from any boat and placed, left, discharged or caused to be placed, or discharged in or near any waters of the State at any time by any person whether or not he is the owner, operator, guest or occupant of a boat.

Section 3. Marine Toilets. Any Marine Toilet located on or within any boat operated on waters of the State shall have securely affixed to the interior discharge opening of the toilet a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the State Board of Health or some other treatment facility or method authorized by regulation of the State Board of Health. All sewage passing into the waters of the State from boats shall pass solely through the suitable treatment devices affixed to the interior discharge opening of the marine toilet.

Approved, March 9, 1965

CALIFORNIA
West's California Codes

Health and Safety Code, sec. 5411
Prohibits the discharge by anyone of sewage or industrial waste in any manner which will result in contamination, pollution or a nuisance.

Health and Safety Code, sec. 5461
The discharge of sewage or industrial waste in any manner which results in contamination is a misdemeanor.

Health and Safety Code, sec. 4401
It is a misdemeanor for any person to place, deposit or dump any garbage in or upon the navigable waters of the State.

Harbors and Navigation Code, sec. 133
The discharge of oil into the navigable waters of the State from any vessel is a misdemeanor except in an emergency.

Health and Safety Code, sec. 4459
The mooring of a houseboat or boat used as a residence on any waters within two miles above the intake or place where any city, town, or village takes its water from a river or stream for drinking or domestic purposes is unlawful except for temporary mooring during transportation for not longer than one day.

COLORADO

1966 Regular Session

Senate Bill 2
Colorado Water Pollution Control Act of 1966

Sec. 3 - Creates the State Water Pollution Control Commission, as a Division of the State Department of Public Health. It is designated as the State Water Pollution Control Agency for the State for all purposes of the Federal Water Pollution Control Act.

Sec. 5 - It is authorized to exercise general supervision of the administration and enforcement of the provisions of the Act.

Sec. 8 - Authorizes the Commission to adopt and promulgate reasonable standards of quality of the waters of the State.

Sec.14 - It is made unlawful for anyone to cause the pollution of any waters of the State in violation or the failure to comply with any order of the Commission, including orders fixing standards of water quality adopted.

Act. Effective: 3-1-66

The initial standards of water quality adopted by the Commission under the powers of Sec. 8 of the Act shall take effect on 3-1-67.

CONNECTICUT
Connecticut Gen. Statutes, Annotated

Section 25-24
No person or municipal or private corporation shall deposit any garbage, domestic refuse or other material of like nature, and no person or corporation owning or operating a waterborne craft or vehicle shall deposit or permit the deposit or discharge of any garbage, waste matter or refuse matter of any kind or description whatever, from such waterborne craft or vehicle, in the waters of any river, stream, pond, lake or tidal waters of this State, or shall establish or maintain or cause the use of any place for the disposal of any such material on any land within a distance of fifty feet of the high water mark of any such waters in any place where storm or high water may carry such material to any adjacent waterway. The Commission may require the harbor masters to investigate any source of pollution and to make reports concerning the same. Any person who violates any provision of this section shall be fined not more than $1,000, or imprisoned not more than three months, or both.

Section 25-26
No person, corporation or municipality shall place in or permit to be placed in, or discharge or permit to flow into, any of the waters of the State, any sewage prejudicial to public health.

Section 25-31
Violation of above section carries a fine of $500, or a prison term of six months, or both.

DELAWARE
Delaware Code Annotated

Section 23-709

The Water Pollution Commission exercises general supervision over the administration and enforcement of all laws relating to the pollution or of any orders of the Commission subjects the offender to a fine of not less than $10 nor more than $100 for each offense.

Section 16-1301

It is unlawful to discharge or permit or allow to escape into any running stream of water within the State, the water of which stream is used by inhabitants for drink or beverage purposes, any dye-stuffs, drugs, chemicals or other substance of any kind, whereby and by means whereof the water so supplied is made and becomes noxious to the health or disagreeable to the senses. Violation is punishable by a fine of not less than $1,000 nor more than $5,000. In addition, the court issues an order for abatement of the nuisance within 20 days after conviction.

GEORGIA

Georgia Laws of 1964

Approved 3/11/64
Effective 7/1/64

Sec. 5(Act 870, Laws of 1964)

(1) The Water Quality Control Board exercises general supervision over the administration and enforcement of the Act.

Sec. 5(Act 870, Laws of 1964) - The Water Pollution Board shall:

(11) Require any marine toilet or other disposal unit located on or within any boat operated on waters of this State to have securely affixed to the interior discharge toilet or unit a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the Board or some other treatment or facility or method authorized by regulation of the Board. All sewage passing into or through the marine toilet or units shall pass solely through the said device. All boats located upon the waters of this State are subject to inspection by the Water Quality Control Board or its duly authorized agents at any time for the purpose of determining compliance with the provisions of this paragraph; provided, however, that this paragraph does not apply to ocean going vessels, of 20 tons displacement or more.

Sec. 10 (Act 870, Laws of 1964)

Makes it unlawful to use any waters of the State for the disposal of sewage, industrial wastes, or other wastes, except as to conform to and comply with all rules, regulations, orders and permits established under the provisions of this Act.

HAWAII
Revised Laws of Hawaii
(& 1963 Suppl.)

Sec. 112-5
The Board of Harbor Commissioners (the functions of which were transferred to the Dept. of Transportation as of 7/1/61), is authorized to make, alter and amend such rules and regulations as may be deemed necessary for the regulation and control of all shipping in the harbors, shore waters and navigable streams, and also such rules and regulations to prevent the throwing into the harbors, shore waters and navigable streams of rubbish, refuse, garbage or other substances liable to make such harbors, shore waters and navigable streams unsightly, unhealthful or unclean, or liable to fill up or shoal or shallow such harbors, shore waters and streams and likewise to prevent the escape of fuel or other oils into such harbors, shore waters and streams, either from any vessel or from pipes or storage tanks upon the land.

Such rules and regulations when published in the manner prescribed for the promulgation of laws, shall upon publication have the force and effect of law.

No refuse shall be thrown overboard. All vessels maintained as residences for living purposes shall be equipped with a toilet in working condition, and all such toilets, excepting those on vessels from out-of-state visiting for a period not exceeding 60 days, shall be equipped with a sewage ejector chlorinator, or other approved means of preventing pollution in harbor waters.

INDIANA

Burns Indiana Statutes, Annotated
(& 1963 Cum. Pocket Suppl.)

Sec. 68-820
It shall be unlawful to keep, maintain or operate upon the public waters of this State any boat which is equipped with a water closet or toilet unless the same is sealed or otherwise rendered inoperative so that no human waste can be discharged into such waters therefrom, excepting any boat operating solely upon the water of Lake Michigan.

Sec. 68-868
Violation of above section is a misdemeanor, punishable for first offense by maximum fine of $10 and/or thirty days, and subsequent offenses by maximum fine of $100 and/or sixty days.

Sec. 68-520 (1961 Replacement)
The Stream Pollution Control Board has jurisdiction to control and prevent pollution in the waters of the State with any substance which is deleterious to the public health or to the prosecution of any industry or lawful occupation, or whereby any fish life or any beneficial animal or vegetable life may be destroyed, or the growth or propagation thereof prevented or injuriously affected.

Sec. 35-2901
Prohibits the deposit into the waters of the State any substance which is deleterious to the public health or to the prosecution of any industry or lawful occupation in which the water may be lawfully used.

Sec. 68-524 (1961 Replacement)
It is made unlawful for any corporation, municipal corporation, association, partnership, person or any other legal entity to throw, run, drain, or otherwise dispose into any of the streams or waters of the State, or allow to seep or otherwise dispose into such waters any organic or inorganic matter that will cause or contribute to a polluted condition of such waters according to determination made by the Stream Pollution Control Board.

MICHIGAN
Michigan Statutes Annotated

Sec. 3.523
The Water Resources Commission is authorized to bring court action as may be necessary to carry out the provisions of the Act, and to enforce any and all laws relating to the pollution of the waters of the State.

Sec. 3.425
The Commission has the authority to take all appropriate steps to prevent any pollution which it deems to be unreasonable and against the public interest in view of existing conditions in any lake, river, stream or other waters of the State.

Sec. 3.526
It is made unlawful for any person to discharge into any lake, river, streams or other waters of the State any substance which is injurious to the public health or to the conducting of any industrial enterprise or other lawful occupation. Any person who discharges or permits to be discharged any waste or pollution into any of the waters of the State in contravention of the provisions of this Section shall be deemed a violator.

Sec. 3.529
Anyone who wilfully violates any provisions of the Act or any restriction, regulation or final order of determination of the Commission made thereunder is subject to a penalty of not to exceed $500 per day for each day of such violation.

Public Act 132, Laws of 1964
Section 1. Act no. 328 of the Public Acts of 1931, as amended, being section 750.1 to 750.568 of the Compiled Laws of 1948, is hereby amended by adding a new section 110b to read as follows:

Section 110b. Any person who discharges, dumps, deposits or throws or causes or permits the discharging, dumping, depositing or throwing of any garbage, except that which has passed through a disposal unit of a type approved by the United States Public Health Service, or oil or rubbish from a vessel or watercraft of 25 or more feet in length into a river or inland lake within this state, or within three miles of the shoreline of any part of the Great Lakes or connecting water thereof within this state, is guilty of a misdemeanor punishable by imprisonment in the county jail for not more than one year or by a fine of not more than $1,000, or by both.

Section 2. This act shall take effect January 1, 1966.

MINNESOTA
Minnesota Statutes Annotated
(& 1963 Cum. Annual Poc. Pt.)

Sec. 115.03, Subd.1
The Water Pollution Control Commission is authorized to administer and enforce all laws relating to the pollution of any waters of the State.

Sec. 115.07, Subd.4
Pollution of any waters in violation of the Act or any order of the Commission constitutes a nuisance and may be enjoined.

Sec. 115.07, Subd.6
Violation of any provisions of the Act or of any order of the Commission is a misdemeanor.

Sec. 361.29
Provides that no person owning or operating a watercraft or other marine conveyance upon the waters of the State of Minnesota or other marine conveyance upon the waters of the State shall use, operate or permit the use or operation of any marine toilet or other similar device for the deposition of sewage or other wastes, unless the marine toilet is equipped with a treatment device of a type acceptable to the water pollution control commission of the State of Minnesota. No person shall discharge into the waters of the State, directly or indirectly from a watercraft, any untreated sewage or other waste, nor shall any container of untreated sewage or other wastes be placed, left, discharged in or near any waters of the State from a watercraft in such manner or quantity as to create a nuisance or health hazard or pollution of such waters, by any person or persons at any time whether or not the owner, operator, guest or occupant of a watercraft or other marine conveyance.

On and after January 1, 1965, no watercraft or other marine conveyance upon the waters of the State shall be equipped with any marine toilet unless also equipped with a treatment device acceptable to the Water Pollution Control Commission of the State; this requirement, however, does not apply to certain exempt watercraft.

Provides that no license shall be issued for any watercraft bearing a marine toilet except upon certification by the owner of the installation of an acceptable treatment device for use with such marine toilet.

Anyone violating the provisions of this section is guilty of a misdemeanor.

MISSOURI
Vernon's Missouri Statutes Annotated

Sec. 204.080
Authorizes the Water Pollution Board to administer and enforce the laws of the State relating to the prevention and control of water pollution.

Sec. 204.030
Makes it unlawful for anyone to cause pollution of State waters. Any such action is declared to be a public nuisance.

Sec. 306.260
No marine toilet on any boat, operated upon waters of the State, shall be so constructed and operated as to discharge any inadequately treated sewage into the waters directly or indirectly. No boat shall be equipped to permit discharge from or through its marine toilet, or in any other manner, of any inadequately treated sewage at any time into waters of the State, nor shall any container of inadequately treated sewage be removed from any boat and placed, left, discharged in or near any waters of the State at any time by any person whether or not he is the owner, operator, guest or occupant of the boat.

Sec. 306.270
Any marine toilet located on or within any boat operated on waters of the State shall have securely affixed to the interior discharge opening of the toilet a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the Water Pollution Board or some other treatment facility or method authorized by regulation of the Water Pollution Board.

Sec. 306.290
Violation of the Act is a misdemeanor.

The provisions of the Act do not apply to boats engaged in interstate commerce on the Missouri and Mississippi Rivers.

NEBRASKA
Revised Statutes of Nebraska
(& 1961 Cum. Suppl.)

Sec. 71-3003
Creates within the Department of Health a State Water Pollution Control Council.

Sec. 71-3004(2)
The Council adopts a comprehensive program for the prevention, control and abatement of pollution of the waters of the State.

Sec. 37-516
Makes it unlawful for anyone to discharge any refuse into or near any State waters.

Sec. 28-1016
Makes it a nuisance for anyone to corrupt or make impure any stream or watercourse.

Sec. 81-815.17
Authorizes the Game, Forestation and Parks Commission to prescribe regulations to carry out the State Boat Act.

NEVADA
Nevada Revised Statutes

Sec. 439.200
The St B/H is authorized to make and enforce rules and regulations for, among other things, the sanitary protection of water and the control of sewage disposal.

Sec. 445.060
The State Board of Health is authorized, among other things, (5) to recommend measures for abatement of water pollution originating in this State.

Sec. 488.335
Any marine toilet located on or within any boat operated on waters of this State shall have securely affixed to the interior discharge opening of such toilet a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the State Department of Health or some other treatment facility or method authorized by regulation of the State Department of Health. All sewage passing into or through such marine toilets shall pass solely through such devices.

Sec. 488.325
1. No marine toilet on any boat operated upon waters of this State shall be so constructed and operated as to discharge any inadequately treated sewage into such waters directly.

2. No boat shall be so equipped as to permit discharge from or through its marine toilet, or in any other manner, of any inadequately treated sewage at any time into waters of this State, nor shall any container of inadequately treated sewage be placed, left, discharged in or near any waters of this State by any person at any time whether or not the owner, operator, guest or occupant of a boat.

NEW HAMPSHIRE
New Hampshire Revised Statutes Annotated

Sec. 149:4
(1) The Water Pollution Commission exercises general supervision over the administration and enforcement of the Water Pollution Control Act.

Sec. 149-A:2
Provides that after December 31, 1958, any marine toilet located on or within any boat operated on waters of this State shall have securely affixed to the interior discharge opening of such toilet a suitable treatment device in operating condition, constructed and fastened in accordance with regulations of the Water Pollution Commission or some other treatment facility or method authorized by regulations of the Commission. All sewage passing through such marine toilets shall pass solely through such devices.

Sec. 149-A:4
Violations of the Act or of the regulations of the Commission carries a fine of up to $500, or imprisonment up to one year, or both. Such fine when imposed constitutes a lien against the boat.

NEW JERSEY
New Jersey Statutes Annotated
(Permanent edition)
(1964 Cum. Ann. Pocket Parts)

Sec. 58-12-2
The State Department of Health is authorized, among other things, to investigate all complaints of pollution of the waters of the State which are brought to its attention, and may inspect any of the waters of the State.
If the Department finds that any of the waters are being polluted in such a manner as to threaten injury to any inhabitant of the State in their health, comfort, or property, it notifies the polluter to cease such pollution and make other disposition of its pollution.

Sec. 58-12-4
The Department is authorized to bring injunction proceedings against alleged polluters.

Sec. 2A: 170-69.1
Any person who discharges or suffers, or permits the discharge of any waste, debris, refuse or any other matter or material by any method, means or manner into or upon the coastal waters or tidal water bays of this State from any vessel afloat on said waters, which waste, debris, refuse, material or matter may or will tend to litter any established bathing beach or any beach customarily used for bathing purposes or to pollute the waters adjacent to any such beach, is a disorderly person.

Sec. 2A: 170-69.1a
Any person who discharges, or suffers or permits the discharge of any excrement, waste, debris, refuse, chemical or any other matter or material by any method, means or manner, into or upon any of the fresh waters of this State from any vessel afloat on said waters, which excrement, waste, debris, refuse, chemical, material or other matter may or will tend to pollute said waters, or to harm or destroy the fish therein or the wildlife thereupon, or to litter said waters or the shores or banks adjacent thereto, is a disorderly person, and upon conviction, shall be punished by a fine of not less than $25 nor more than $100 for the first offense and for each subsequent offense a fine of not less than $100 nor more than $200 or by imprisonment for not more than ninety days, or both.

Sec. 2A: 170-69.1b
No vessel which is required to be registered or licensed pursuant to law in order to operate in any of the waters of this State, other than tidal waters, shall be registered or licensed to so operate if it contains any toilet facility, which permits or could permit the discharge into any of the waters of this State of any excrement, waste, debris, refuse, chemical or to harm or destroy the fish therein or the wildlife thereon, or to litter said waters or the shores adjacent thereto.

Sec. 58: 10-15
Prohibits the discharge from water closets or urinals from any stream or other power boat while being operated within territorial limitations of designated watersheds.

Sec. 58:10-16
Violation of above section is a misdemeanor.

NEW YORK
AN ACT
S.2182

To amend the Navigation Law, in relation to regulating the disposal of sewage from watercraft and prohibiting the littering of waterways.

Prohibits any person, whether engaged in commerce or otherwise, to place, throw, deposit, or discharge, or cause to be placed, thrown, deposited, or discharged into the waters of the State, from any watercraft, marina or mooring, any sewage, or other liquid or solid materials which render the water unsightly, noxious or otherwise unwholesome so as to be detrimental to the public health or welfare or to the enjoyment of the water for recreational purposes.

Prohibits the use of marine toilets which discharge, directly or indirectly, any untreated sewage into waters of the State.

Provides that every marine toilet on watercraft used or operated upon the waters of the State shall be equipped with a pollution control device approved by the State Health Department. Sewage passing through a marine toilet equipped with a chlorinator or chemical treatment facility shall be deemed untreated unless the effluent meets the following minimum standards: (1) sufficiently divided into fine particles so as to be free of unsightly or floating solids; (2) containing 1,000 or less coliform per 100 ml.

Empowers the Department of Conservation to direct that the issuance of a boat registration certificate or a renewal be withheld if a pollution control device has not been installed as required.

The State fully reserves to itself the exclusive right to establish requirements with reference to the disposal of sewage from watercraft. In order to insure Statewide uniformity, the regulation by any political subdivision of the state of sewage disposal from watercraft is prohibited.

Provides for inspection of watercraft by the Department of Health for the purpose of determining whether such watercraft is equipped with approved pollution control facilities.

Provides a fine of not more than $100 or imprisonment of not more than 60 days, or both, for violation.

Introduced - February 7, 1966 Approved - August 1, 1966

NORTH CAROLINA

1965 Regular Session

House Bill 278
Ch. 634, Laws of 1965
Approved 5-20-65

Amends Sec. GS 75A-6 by adding subsection (c), as follows:

Authorizes and directs the State Board of Health to prepare design standards that will be used as a guide in approving sewage treatment devices and holding tanks for marine toilets installed in boats operating on the inland lake waters of the State.

No vessel operating on the inland lake waters of the State that is equipped with a marine toilet shall be registered by the Wildlife Resources Commission unless such vessel is provided with a sewage treatment device or holding tank approved by the State Board of Health.

Any boat or vessel equipped with a sewage treatment device or holding tank operated on inland lake waters of North Carolina which does not meet the design standards and approval of the State Board of Health prior to Jan. 1, 1966, may continue to use such device or tank until Jan. 1, 1969.

Amends GS 75A-10 by adding subsection (c), as follows:

No person shall place, throw, deposit or discharge into the inland lake waters of the State any litter, raw sewage or other liquid or solid matter which renders the waters unsightly, noxious or otherwise unwholesome so as to be detrimental to public health or welfare or to the enjoyment and safety of the water for recreational purposes.

Violation of this provision is a misdemeanor.

Approved 5-20-66
Effective 1-1-66

NORTH CAROLINA
General Statutes of North Carolina

Sec. 143-213
Establishes the State Stream Sanitation Committee.

Sec. 143-215.2
Prohibits anyone from discharging sewage or other wastes into the waters of the State, after the effective date applicable to any watershed.

Chapter 912 (Laws of 1963)
Makes it unlawful for any person or group of persons to occupy, use, or permit to be used, upon the waters of Lake James in Burke and McDowell Counties, any boathouse, houseboat, or raft containing an enclosed area for living quarters, or any other water craft containing living quarters without such craft being equipped with chemical toilets approved by the health department of either Burke or McDowell Counties, or other sanitary toilet facilities which will prevent the discharge of any raw sewage into the waters of the said Lake.

The following are amendments to Chapter 75A of the General Statutes relating to motor boats and vessels so as to require sewage treatment or holding devices:

Section 1. Subsection (5) of G. S. 75A-2 is hereby rewritten to read as follows:

"Vessel" means every description of watercraft or structure, other than a seaplane on the water, used or capable of being used as a means of transportation or habitation on the water.

Subsection (2) of G. S. 75A-2 is hereby rewritten to read as follows:

"Operate" means to navigate or otherwise use or occupy a motor boat or vessel, and shall be applicable to any motor boat or vessel that is afloat.

Section 2. G. S. 75A-6 is hereby amended by adding a new subsection immediately after subsection (n) to read as follows:

(o) The State Board of Health is hereby authorized and directed to prepare design standards that will be used as a guide in approving sewage treatment devices and holding tanks for marine toilets installed in boats operating on the inland lake waters of the State.

No vessel operating on the inland lake waters of this State that is equipped with a marine toilet shall be registered by the Wildlife Resources Commission unless such vessel is provided with a sewage treatment device or holding tank approved by the State Board of Health.

General Statutes of North Carolina
(continued)

All vessels operating on the inland lake waters of the State that are equipped with a marine toilet shall be required to provide a sewage treatment device or holding tank approved by the State Board of Health.

The protectors of the Wildlife Resources Commission shall inspect vessels on the inland lake waters to determine if approved treatment devices or holding tanks are properly installed and if they are operating in a satisfactory manner.

Any boat or vessel equipped with a sewage treatment device or holding tank operated on the inland lake waters of North Carolina which does not meet the design standards and approval of the State Board of Health prior to January 1, 1966, may continue to use such device or tank until January 1, 1969.

Section 3. G. S. 75A-10, is amended by adding subsection (c) to read as follows: (c) no person shall place, throw, deposit, or discharge or cause to be placed, thrown, deposited, or discharged into the inland lake waters of this State, any litter, raw sewage, bottles, cans, papers, or other liquid or solid materials which render the waters unsightly, noxious, or otherwise unwholesome so as to be detrimental to the public health or welfare or to the enjoyment and safety of the water for recreational purposes.

Violation of this provision shall be a misdemeanor and subject to penalty as provided in Section 18 (a). Section 18 (a) is amended to add "75A-10 (c)", following 75A-9, and Section 18 (b) is amended by adding "(a)" and "(b)" following 75A-10.

Section 4. This Act shall become effective on January 1, 1966.

Section 5. All laws and clauses of laws in conflict with this Act are hereby repealed.

Ratified, May 20, 1965

OHIO
Page's Ohio Revised Code Annotated
(& 1964 Suppl.)

Sec. 6111.03
The Water Pollution Control Board is authorized to develop programs for the prevention, control and abatement of new or existing pollution of the waters of the State; to issue, modify, and revoke orders prohibiting or abating the discharge of sewage, industrial waste and other wastes into State waters.

Sec. 6111.04
Prohibits the pollution of State waters; any such pollution is a public nuisance, except where the Board has issued a permit.

Sec. 6111.07
Provides that no person shall violate the provisions of the Act or any order of the Board. An Action for an injunction may be brought against the violator.

House Bill No. 885, approved 7/10/63, effective 10/8/63
Amends sec. 1541.31 of the Revised Code, relating to an Agreement between the States of Ohio and Pennsylvania regarding Lake Pymatuning. Section 4 of such Agreement provides, as follows: "The Lake shall be forever protected against pollution of its waters by industrial trade waste, individual, or municipal sewage from shore or boat, and the discharge or any noxious or deleterious substance, liquid or solid, into the waters of the lake which is or may become inimical, or injurious, to public health or to animal or aquatic life is hereby expressly forbidden."

"No sewage may be discharged into the waters of the lake except after complete treatment and then only upon permit approved by the health departments of both States."

House Bill No. 602, approved 7/1/63, effective 9/30/63
Amends sec. 3767.99 and sec. 3767.31 are enacted to prohibit the throwing or depositing into any river, stream or any other body of water various materials, and provides for penalties therefor.

Sec. 1547.33
Provides that no person shall launch, moor, dock, use or operate any watercraft on State waters which contains a sanitary system capable of discharging human or household wastes into the water. Such sanitary system shall be removed, sealed or made to drain into a portable tank for disposal ashore according to local health regulations. Watercraft operating solely on Lake Erie, the Muskingum River, the Ohio River, and the immediately connected harbors and anchorages, excepted.

Sec. 1547.99
Violation punishable by fine from $10 to $100.

OREGON

Ch. 362, Laws of 1965
Senate Bill 185

Provides that after September 1, 1967, notwithstanding any other law or regulation, no garbage or sewage shall be discharged into the waters of the State from any building or structure unless such garbage or sewage has been treated or otherwise disposed of in a manner approved by the State Board of Health and the Sanitary Authority of the State.

Buildings and structures are defined to include but are not limited to floating buildings and structures, houseboats, moorages, marinas, or any boat used as such; sewage means human excreta as well as kitchen, bath and laundry wastes; garbage means putrescible animal and vegetable wastes resulting from the handling, preparation, cooking and serving of food.

Provides that the Sanitary Authority may extend the time of compliance upon certain conditions as it may deem necessary.

Violation of Act is a misdemeanor.

TENNESSEE

GENERAL STATEMENT

The Stream Pollution Control Board is charged with the primary responsibility of controlling water pollution in the State. Based upon this authority the following regulations have been adopted:

Regulations adopted by the Tennessee Stream Pollution Control Board pursuant to Sections 70-301 to 70-319 of the Tennessee Code specify that after January 1, 1967, "no person shall operate on the public waters within the State of Tennessee any type of boat or floating facility as .... defined which has on it or attached thereto a marine toilet unless the discharge from that fixture meets the requirements ..... set forth."

The regulations then define certain pertinent terms and specify the requirements for three types of systems: devices which discharge overboard; holding tanks or other closed systems, including incinerators; and sealed systems.

Effluent requirements for systems which discharge overboard specify that such effluents must be free of unsightly floating solids and must not exceed a coliform density of 240 per hundred milliliters. Other requirements are intended to assure that the effluent requirements shall be met and that no raw sewage shall accidentally be discharged.

The requirements for holding tank or other closed systems and for sealed systems are intended to make sure that the sewage from such systems shall only be discharged through approved shore-based installations and that no obnoxious odors shall be vented to the interior of the boat or floating facility.

The last two paragraphs of the regulations specify that a list of approved types of treatment devices and holding tanks may be obtained from the Board, and provide for the enforcement of the regulations.

Approved Systems

A list of the approved types of treatment devices and holding tanks for use on boats and floating facilities as of June 16, 1966, names one type of holding system for dockside removal and treatment, two treatment devices (chlorinators) and two incinerating devices, as well as two additional types of chlorinators which are being considered but on which adequate data have not been submitted.

An introduction to the approved list states that the Board does not have facilities for testing units, but will base its approval upon certification by the manufacturers of devices that their products meet the standards as set forth, plus a test report made by a qualified laboratory or person showing that the product meets the prescribed standards.

PENNSYLVANIA
Purdon's Pennsylvania Statutes, Annotated
(& 1963 Cumulative Supplement)

Sec. 71-540
The Sanitary Water Board in the Department of Health has the primary functions of controlling water pollution.

Sec. 71-540
(11) (e) The Board is authorized to make rules and regulations for the effective administration and enforcement of the laws of the Commonwealth prohibiting the pollution of the waters thereof.

Sec. 35-691.301
Provides that no person shall place or permit to be placed or discharge or permit to flow, or continue to discharge or permit to flow, into any waters of the Commonwealth any industrial wastes, except as provided in the Act.

Sec. 35.691.601
Provides that all pollution declared to be a nuisance or maintained contrary to the provisions of the Act are abatable.

Sec. 71-1840
This section pertains to an Agreement between the Commonwealth of Pennsylvania and the State of Ohio relating to Lake Pymatuning. Article 4 of such Agreement relates to water pollution, as follows: "The Lake shall forever be protected against pollution of its waters by industrial trade waste, individual or municipal sewage from shore or boat and the discharge of any noxious or deleterious substance, liquid or solid into the waters of the lake which is or may become inimical or injurious to public health or to animal or aquatic life is hereby expressly forbidden."

SOUTH DAKOTA
South Dakota Code of 1939
(& 1960 Suppl.)

Sec. 61.0104 (1960 Suppl.)
The Water Resources Commission exercises general supervision over the waters of the State.

Sec. 25.1405(10) (1960 Suppl.)
Provides that every vessel equipped with kitchen or toilet facilities shall be so equipped and operated to handle or treat liquid and solid wastes in a manner that will prevent pollution of the receiving waters.

Sec. 25.9914 (1960 Suppl.)
Violation constitutes a misdemeanor punishable by a fine up to $100 and/or imprisonment up to thirty days.

WISCONSIN
West's Wisconsin Statutes Annotated
(& 1964 Cum. Annual Poc. Pt.)

Sec. 144.53
(1) The Committee on Water Pollution exercises general supervision over the administration and enforcement of all laws relating to the pollution of the surface waters of the State.

Sec. 146.13
(2) Provides that no person shall discharge by any means whatsoever untreated domestic sewage into any surface waters.

Sec. 29.01
(4) All waters within the jurisdiction of the State are classified as follows: Lakes Superior and Michigan, Green Bay, Sturgeon Bay, Sawyer's Harbor, and the Fox River from its mouth up to the dam at De Pere are "outlying waters." All other waters, including the bay, bayous, and sloughs of the Mississippi River bottoms, are "inland waters."

Sec. 30.71 (1964 Cum. Suppl.)
Provides that no person shall maintain or operate upon the inland waters of this State, except Lake Winnebago, the Mississippi river and the Wisconsin river for 15 miles above and below the dam at Wisconsin Dells, any boat which is equipped with a toilet unless such toilet is sealed or otherwise rendered inoperative so that no human wastes can be discharged into such waters. "Inland waters" means the waters defined as inland waters by sec. 29.01(4).

After April 1, 1965, the provisions of this section shall apply also to Lake Winnebago and the hitherto exempted portion of the Wisconsin river.

After April 1, 1965, no person shall operate any boat equipped with toilets on inland waters of this state unless the toilet wastes are retained for shore disposal by means of facilities constructed and operated in accordance with rules adopted by the state board of health.

Amendment Pending

PROPOSED POLICY ON SEWAGE AND WASTE DISPOSAL FROM VESSELS

Prepared By

DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION

Under the provisions of the Interstate Quarantine Regulations, the Public Health Service is required to take necessary action to prevent the spread of communicable disease from one State or possession to any other State or possession. Historically, the Service has discharged its responsibility in this area through the exercise of the surveillance and control over health problems incident to the interstate movement of vessels, railroads, aircraft, and buses. The growth of vessel operations interstate has required an increased degree of surveillance over their activities both for the protection of the health of the passengers and crews and more recently to the particular problems incident to actual transmission of disease organisms interstate as a result of normal vessel operations. The specific legal authority is contained in the Interstate Quarantine Regulations, Section 72.111, which reads as follows:

> "72.111 Applicability. The sanitation facilities and the sanitary conditions on vessels engaged in interstate traffic shall comply with the requirements prescribed in this subpart, provided that no major structural change will be required on existing vessels."

The continuing problem of proper disposal of sewage wastes from vessels has been accentuated within the past few years. The Service, in cooperation with the other Federal agencies involved and the vessel industry, has devoted considerable time in attempting to develop rational methods for the proper disposal of sewage and wastes in order to eliminate the serious public health hazards which might result from the disposal of such wastes.

This particular problem was highlighted with the opening of the St. Lawrence Seaway which resulted in increased traffic on the Great Lakes by vessels of both American and foreign flag registry. Considerable fear has been expressed regarding the possible discharge of waste from such vessels in the proximity of waterword intakes by municipalities utilizing the Great Lakes as a source of water supply. As an interim action, the Interstate Quarantine Regulations were revised on August 30, 1960, to restrict the discharge of sewage, ballast or bilge water from vessels in some 150 areas adjacent to potable water intakes on the Great Lakes. The delimiting action incorporates an area with a radius of three miles around each of these intakes. It was recognized that this represented solely an interim action pending the development of acceptable methods of sewage treatment of disposal. Concurrently, there has been an increased interest on the part of local, State and Federal authorities in problems created by sewage discharges from all types of water conveyances including pleasure craft. In order to provide a mechanism for further consideration of the problem, the Public Health Service established an Interdepartmental Committee on Sewage and Waste Disposal from Vessels to assist in developing a solution to these problems. On the basis of the Committee's recommendations, the Interstate Quarantine Regulations will be amended to require that vessels subject to the Regulations provide adequate sewage treatment facilities. Federal agencies that own, operate or are involved in the construction of vessels could use

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This proposed policy was developed with the assistance of members of the Interdepartmental Committee on Sewage and Waste Disposal from Vessels.

these recommendations as a guide. In addition, it is anticipated that the guidelines contained in the policy issuance from the Committee and the criteria contained in the Interstate Quarantine Regulations will be useful to State and local health agencies in exercising their responsibilities on intrastate vessel sanitation problems, particularly in respect to noncommercial pleasure craft.

Recommendations:

1. Waste to be Treated

All new vessels or vessels undergoing major conversion, destined for operating in interstate traffic under the terms of the Interstate Quarantine Regulations, shall be equipped with facilities to treat wastes from toilets, urinals, facilities in hospital areas handling fecal material and wastes from garbage grinders when such grinders are installed. In lieu of treatment, these wastes may be collected in holding tanks properly equipped with pumps and piping, so that the wastes can be discharged to approved shore-based or floating installations.

2. Galley Wastes

All galley wastes, exclusive of ground garbage, which might contain grease shall pass through grease interceptors prior to their discharge overboard or to the treatment unit aboard the vessel. Where grease interceptors are installed, the grease collected shall be disposed of by incineration, stored for disposal ashore, or discharged overboard on the high seas. Grease interceptors shall be designed and installed in accordance with the applicable provisions of the National Plumbing Code, ASA A40.8.

3. Design Flow Rates

The design of treatment facilities and holding tanks shall be based on an average flow of at least 30 gallons per capita per day.

4. Effluent Quality (41 or more passengers and crew)

For vessels with a normal complement (passengers and crew) of 41 or more, minimum treatment shall be such as to produce an effluent with 50 ppm or less of B.O.D., 150 ppm or less of suspended solids, and a coliform MPN of 1,000 or less per 100 ml.

Facilities shall be provided for the storage of excess sludge for proper disposal to approved land based facilities or on the high seas.

5. Effluent Quality (40 or less passengers and crew)

For vessels with a normal complement (passengers and crew) of 40 or less, minimum treatment shall consist of passing the wastes through a grinder followed by disinfection which will produce an effluent having a coliform MPN of 1,000 or less per 100 ml.

6. Disinfection

A method of disinfection equally effective to chlorination may be acceptable where disinfection is required to produce an effluent meeting the coliform requirements specified in paragraphs 4 and 5 above.

7. The above requirements do not apply to vessels operating intrastate.

Proposed Changes to the Interstate Quarantine Regulations

SEWAGE TREATMENT. New vessels, or vessels undergoing major conversion, that will operate in interstate traffic under the terms of these regulations, that are contracted for after the effective date of this section, shall be equipped with facilities to treat wastes from toilets, urinals, facilties in hospital areas handling fecal material and wastes from garbage grinders when such grinders are installed. In lieu of treatment, these wastes may be collected in holding tanks properly equipped with pumps and piping, so that the wastes can be discharged to approved shore-based or floating installations.

The design of treatment facilities and holding tanks shall be based on an average flow of at least 30 gallons per capita per day. For vessels with a normal complement (passengers and crew) of 41 or more, minimum treatment shall be such as to produce an effluent with 50 ppm or less of B.O.D., 150 ppm or less of suspended solids, and a coliform MPN of 1,000 or less per 100 ml. For vessels with a normal complement (passengers and crew) of 40 or less, minimum treatment shall consist of passing the wastes through a grinder followed by disinfection which will produce an effluent having a coliform MPN of 1,000 or less per 100 ml.

All galley wastes, exclusive of ground garbage, which might contain grease shall pass through grease interceptors prior to (1) their discharge overboard or (2) to the treatment unit aboard the vessel. The grease shall be disposed of by incineration, stored for disposal ashore, or discharged overboard on the high seas. Grease interceptors shall be designed and installed in accordance with the applicable provisions of the National Plumbing Code, ASA A40.8.

RESOLUTIONS AND POSITION STATEMENTS:

Conference of State Sanitary Engineers - June 1963

Conference of Municipal Public Health Engineers - November 1963

Ohio River Valley Water Sanitation Compact - January 1964

American Public Health Association - October 1964

Position Statement - Executive Board of the Conference of State Sanitary Engineers - 1964

Position Statement - Association of State and Territorial Health Officers - 1964

Position Statement - USPHS and Conference of State Sanitary Engineers - 1965

CONFERENCE OF STATE SANITARY ENGINEERS

RESOLUTION NO. 9 - JUNE 1963

SEWAGE AND WASTE DISPOSAL FROM VESSELS AND PLEASURE CRAFT

WHEREAS, the problem of sewage and waste disposal by pleasure craft operating on inland waters and lakes is increasing at an extremely rapid rate, and

WHEREAS, the public health hazards resulting from the promiscuous disposal of sewage and waste from such craft into the water on which they are operating are of increasing interest and concern to State and local health agencies, and

WHEREAS, the small craft industry has indicated a desire for information from health and other control agencies on established standards and criteria for the disposal of sewage and waste from such craft, and

WHEREAS, technical developments in the manufacturing of suitable devices have been delayed due to lack of resolution of the needs in this regard, and

WHEREAS, it is necessary to protect the recreational aspects of the water on which these craft will operate and at the same time provide public health protection to water supplies taken from such sources, and

WHEREAS, the Public Health Service does have certain legal responsibilities insofar as it relates to the discharge of sewage and waste from vessels operating interstate, and

WHEREAS, the Federal Interdepartmental Committee on Sewage and Waste Disposal from Vessels established by the Public Health Service is currently considering the issuance of a policy statement regarding criteria for the disposal of such wastes: Therefore, be it

RESOLVED, (1) that the Conference of State Sanitary Engineers urge the Public Health Service through its Interdepartmental Committee on Sewage and Waste Disposal from Vessels to expedite the issuance of the policy statement governing disposal of sewage and waste from vessels, and (2) that the Conference of State Sanitary Engineers provide leadership in the development of test protocol for sewage and waste treatment devices for pleasure craft and cooperate in the development of an acceptance program for these devices through a recognized national testing and evaluation laboratory, such as the National Sanitation Foundation: And be it further

RESOLVED, that the Secretary be instructed to transmit a copy of this resolution to boat manufacturers and the manufacturers of waste treatment devices for pleasure craft, the National Sanitation Foundation and other similar testing laboratories.

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS, INC.

RESOLUTION NO. 15 - NOVEMBER 11, 1963

ESTABLISHMENT OF DESIGN CRITERIA FOR TESTING, EVALUATION AND CERTIFICATION OF MARINE TOILETS AND SEWAGE TREATMENT DEVICES

WHEREAS, pollution of inland bodies of water and tidal estuaries constitutes one of the major environmental health problems of this decade, and

WHEREAS, there is a rapidly increasing use of those waters for recreational purposes for boating, and

WHEREAS, a vast number of these pleasure boats do not have devices to treat sewage or have inadequate devices, which results in the creation of a public health hazard of increasing magnitude, and

WHEREAS, there is a need for the establishment of design, operation and maintenance criteria, and a testing, evaluation and certification program of marine toilet and waste treatment devices, by a public health oriented agency, having competence to undertake such a program or by a joint industry-public health group: Therefore, be it

RESOLVED, that the Conference of Municipal Public Health Engineers, Inc. recommends the development and establishment, at the earliest possible moment, of design criteria and standards for marine toilets and waste treatment devices, by a public health oriented agency having competence to undertake such a program or by a joint industry-public health group, and be it further

RESOLVED, that the National Sanitation Foundation be encouraged to cooperate with public health agencies, water pollution control authorities, manufacturers of marine toilet and waste treatment devices and manufacturers of boats in which such devices would be installed for the development and establishment of design criteria and standards of such devices and to initiate a program of evaluation testing and certification of these marine toilets and waste treatment units: And be it further

RESOLVED, that copies of this Resolution be forwarded to appropriate association, agencies and the National Sanitation Foundation.

OHIO RIVER VALLEY WATER SANITATION COMMISSION

RESOLUTION NO. 1-64 - JANUARY 9, 1964

NOTICE OF INTENT REGARDING WASTES FROM BOATS AND FLOATING FACILITIES

WHEREAS, the discharge of untreated wastes from commercial and pleasure watercraft and floating facilities operating within the Compact District may cause pollution contrary to the language and intent of the Ohio River Valley Water Sanitation Compact; and

WHEREAS, substantial progress has been made in eliminating discharges of untreated wastes from municipalities, industries and other on-shore installations in the District;

NOW, THEREFORE: For purpose of safeguarding the waters of the District as specified in Article I of the Compact; be it

RESOLVED, that the following measures are hereby adopted by the Commission to be followed by the signatory states for the joint cooperative control of waste discharges from watercraft and floating facilities, such measures to become effective January 1, 1967:

1. No marine waste-disposal system on any watercraft or floating facility operated on waters within the District shall be so constructed and operated as to discharge inadequately treated wastes into these waters.

2. All marine waste-disposal systems shall be sealed or otherwise rendered inoperative on waters where use of such systems is prohibited by federal, state or local regulations.

3. On waters within the Compact District where the operation of marine waste-disposal systems is permitted, such systems on or within any watercraft or floating facility shall include a suitable, operating treatment device for the maceration and disinfection of wastes prior to discharge. In lieu of treatment, wastes from watercraft and floating facilities shall be collected in holding tanks properly equipped so that the wastes can be discharged to approved shore-based installations. Be it further

RESOLVED, that the Commission request that each of the signatory states take steps to carry out the provisions of the resolution; and be it further

RESOLVED, that the Commission direct the Engineering Committee to provide a guide-line memorandum for use in implementing this resolution; and be it further

RESOLVED, that, following the effective date of this resolution, the U.S. Coast Guard and appropriate signatory state enforcement agencies, in connection with their routine licensing inspections of watercraft and floating facilities operating within waters of the Compact District, be requested to report to the appropriate state agency or to the Commission those watercraft and floating facilities not complying with this control measure.

AMERICAN PUBLIC HEALTH ASSOCIATION

RESOLUTION - OCTOBER 7, 1964

MARINE TOILETS AND WASTE TREATMENT DEVICES

The rapid increase in the number of pleasure boats on inland bodies of water and on tidal estuaries and the increasing use of these boats and these waters for recreational purposes are contributing measurably to public health problems and water pollution in many portions of the United States and international waters because these boats do not have devices, or have inadequate devices to treat waste before discharge into water.

The American Public Health Association believes there is immediate need for the establishment of design, operation and maintenance criteria, and a testing evaluation and certification program of marine toilets and waste treatment devices by a public health oriented agency, having competence to undertake such a program, or by a joint industry-public health group. The Association encourages state and local health departments or other authorized water pollution control agencies to approve for use, only such marine toilets and waste treatment devices that have been adequately designed, evaluated, and installed and are capable of being operated in such a manner as will not under normal use create water pollution and other public health hazards.

CONFERENCE OF STATE SANITARY ENGINEERS

STATEMENT OF POSITION OF EXECUTIVE BOARD - 1964

RELATIVE TO CONTROL OF POLLUTION FROM PLEASURE CRAFT AND MARINAS

The Conference of State Sanitary Engineers recommends to the Association of State and Territorial Health Officers

a. That each State and Territorial Health Officer encourage the adoption of uniform State laws relating to the control of pollution from pleasure craft and marinas.

b. That each State develop or strengthen educational programs to acquaint the boating public with the problem and need for methods of pollution control.

c. That the ASTHO support the establishment of a mechanism whereby pollution control devices for recreational water craft can be evaluated in accordance with recognized public health principles.

The Conference of State Sanitary Engineers recommends to the Conference of State and Territorial Health Officers

a. That the Public Health Service develop a full-scale program of technical assistance to be carried out in cooperation with State agencies involved in the control of pollution from pleasure craft and marinas in lakes and small harbors; and take steps to develop a model uniform State law relating to the control of such pollution.

b. That the PHS join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational water craft pollution control devices would be endorsed: to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS

STATEMENT OF POSITION - 1964

The State and Territorial Health Officers recommend that the Public Health Service join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational water craft pollution control devices would be endorsed; to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

The State and Territorial Health Officers recommend that the Public Health Service develop a full-scale program of technical assistance to be carried out in cooperation with state agencies involved in the control of pollution from pleasure craft and marinas; and take steps to develop a model uniform state law relating to the control of such pollution.

The Association recommends:

A. That each state and territorial health officer encourage the adoption of uniform state laws relating to the control of pollution from pleasure craft and marinas.

B. That each state develop or strengthen education programs to acquaint the boating public with the problem and need for methods of pollution control.

C. That the State and Territorial Health Officers support the establishment of a mechanism whereby pollution control devices for recreational water craft can be evaluated in accordance with recognized public health principles.

PUBLIC HEALTH SERVICE AND CONFERENCE OF STATE SANITARY ENGINEERS

STATEMENT OF POSITION - 1965

EVALUATION AND TESTING OF SEWAGE TREATMENT AND DISPOSAL DEVICES FOR USE ON PLEASURE BOATS AND OTHER SMALL CRAFT

The Problem:

It has been recognized by health officials and water pollution control authorities at all levels of government that the increasing discharge of untreated sewage from pleasure boats and other small craft into our water resources is contributing to pollution problems in many areas of the country. A variety of sewage treatment devices for boats is now becoming available on the market. The Conference of State Sanitary Engineers' Executive Committee adopted the following statement in 1964:

> That the PHS join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational water craft pollution control devices would be endorsed: to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

The Association of State and Territorial Health Officers in 1964 adopted the following recommendations:

> That the State and Territorial Health Officers support the establishment of a mechanism whereby pollution control devices for recreational water craft can be evaluated in accordance with recognized public health principles.

Scope of Evaluation:

Comprehensive evaluation of marine sewage treatment and disposal devices should include: efficacy of microbiological and particle size reduction; economy and installation factors, reliability of mechanical operation; discharge of an effluent meeting adequate public health and sanitation standards; and general safety of the devices. The evaluation should be conducted under conditions of use including fresh and salt water environments.

Criteria:

To provide a basis for evaluation of marine sewage treatment and disposal devices and to assure inclusion of adequate public health principles therein, uniform water pollution and national public health criteria should be developed. The development of such criteria should be done on a cooperative basis by a joint committee of professional public health and water pollution control personnel, user groups and manufacturers.

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John E. Vogt

Director, Division of Engineering
Michigan Department of Public Health

There is considerable evidence that over the past 25 years much interest has been exhibited regarding the problems stemming from the subject of this National Conference.

The Great Lakes Board of State Sanitary Engineers was one of the groups which early expressed a concern and an interest in doing something about this matter. Back in 1940, a committee of the Board conducted a hearing in Detroit to explore this subject and I feel certain that much of the discussion and many of the comments which came out at that hearing will be repeated during this conference. The situation hasn't changed a great deal over the past 26 years and in the letter of transmittal of the record of the Detroit hearing, which I have here, the following statement was made and certainly is just as apropos today as it apparently was then:

"As progress in water pollution abatement by cities and industries along the Great Lakes goes forward, the problem of boat or vessel pollution assumes increased importance along the margins of the Great Lakes and through their connecting waters. Public water supplies, resort frontage, bathing beaches, fish and wildlife have suffered at times as the result of the discharge of ballast or bilge water from tankers or freighters, not to mention normal sewage or garbage from most watercraft."

At the hearing were representatives of the various navigation companies, boating organizations, public officials and others. Arthur Gorman, whom most of the public health people know as being connected with the City Water Department in Chicago, related what was being done in Chicago, regarding the control of vessel pollution around the Chicago intakes.

At that time there was a city ordinance which required that nothing be discharged from boats within a radius of four miles of the various intake structures of the Chicago Water Department. Gorman's comments indicated that even the four-mile limit did not appear to be sufficient and he had a working agreement with the carriers that they would not discharge anything within 10 miles. Remember, this was back in 1940.

A more recent expression of concern which I came across was at a meeting in Chicago in 1960, called by the regional office of the Public Health Service. Malcolm Hope, who is with us today, also attended that meeting. Again this was aimed largely at vessel traffic here on the Great Lakes and waste discharges around waterworks intakes. As an outgrowth of this meeting, the Public Health Service, in October of 1960, designated a three-mile restricted zone around all waterworks intakes on the Great Lakes, within which there could be no discharge of sewage, bilge water or ballast water. This came out as a regulation adopted by the Public Health Service under the Inter-state Quarantine Regulations.

Another agency which I found has expressed interest through the years is the International Joint Commission through its Board of Engineer Advisors on Pollution of Boundary Waters. Subsequent to adoption of the previously mention regulation of the Surgeon General, a Federal Inter-departmental committee on waste disposal from vessels was established with Mr. Hope as chairman which will be discussed in detail later today. As Charles Farish pointed out in his introductory and welcoming statement, the Conference

of State Sanitary Engineers at their 1963 annual conference adopted a resolution in connection with sewage and waste disposal from vessels and pleasure craft. This resolution urged the Public Health Service, through its inter-departmental committee on sewage and waste disposal from vessels, to expedite the issuance of a policy statement governing sewage and waste disposal and, further, that the Conference of State Sanitary Engineers should provide leadership in the development of test protocol for sewage and waste disposal devices for pleasure craft and cooperate in the development of an acceptance program for these devices through a recognized national testing and evaluation laboratory such as the National Sanitation Foundation. This was two years ago.

There was one other action more recently, i.e., last year. A resolution was adopted by the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers wherein GLUMRB requested the Conference of Sanitary Engineers to establish a joint committee including marine operators, pleasure craft manufacturers, owners, conservation groups, boating law enforcement officials and other appropriate organizations to establish recommended regulations and standards designed to prevent pollution from pleasure craft.

I think all of these actions may have varied slightly but I think they were all aimed at going down the same road and that is to recognize this matter of pollution from vessels and pleasure craft and that today, with the great interest nationally in pollution control that if we are going to really clean up our lakes and streams and our water resources generally, that we are going to have to attach every facet of the pollution problem. So, I think it is to the credit of the National Sanitation Foundation and Public Health Service to call this National Conference on pollution from vessels and bring to bear everyone's thinking on the problem.

I am hopeful that a great deal is going to come out of this meeting and, certainly, something of a long range nature.

Malcolm C. Hope

Acting Chief, Division of Environmental Engineering
and Food Protection
U.S. Public Health Service

We had an ulterior motive in joining forces with the National Sanitation Foundation in calling this meeting. We did it through the mechanism of a contract proposal. The NSF now has the unhappy responsibility of producing a document which will summarize the actions to be taken by this group. Furthermore, the Conference of State Sanitary Engineers will be meeting in Washington next week. As John Vogt told you, the Conference passed a resolution on this subject some three years ago and this meeting will satisfy in part their recognition of the need for action.

Frankly speaking, this action is long overdue. Certainly, there is a need to consider seriously the problem of sewage disposal for vessels of all types and begin to make a positive approach to this problem. We, in the Public Health Service, are interested because of our concern with water supplies. As you know, many of these vessels operate on waters which constitute the municipal water supplies of many of our communities. This is particularly true as it relates to the cities along the Great Lakes which derive their water from that particular group of lakes. The time has come with the increasing burden of pollution that many of our surface water supplies are receiving to improve the raw water quality of our municipal water supplies and treating sewage from vessels is a part of that over-all task.

In addition, we are concerned with the shellfish growing waters of this nation. We have had, for many years, a program which is concerned with the certification of shellfish which move in interstate commerce. A vital part of that program is based on harvesting oysters from waters of satisfactory quality. When you begin to use them for recreational purposes, when you have pleasure craft traversing those waters with heads or toilets on board, you are certainly destroying their quality as a medium in which you can grow wholesome foodstuffs.

The recreational use of waters has certain overtones pertinent to protecting them from sewage pollution. We have been asked by the National Park Service to comment on the propriety of their permitting pleasure craft with heads to operate within the National Park system.

We have been encouraged, as we have worked with the vessel industry under the terms of the Interstate Quarantine Regulations, by the growing recognition on their part of both legal and moral responsibilities as it relates to the need for providing treatment of sewage prior to overboard discharge. You may be surprised to know that most of our larger vessel companies, even in the absence of specific requirements, are at this time installing sewage treatment devices on new vessels that they are constructing. Those operating in foreign ports of the world realize also that port authorities in those areas are becoming increasingly concerned about the quality of harbor waters. London, England, for example, does not permit the discharge of sewage under any circumstances from vessels into waters of the Port of London.

The World Health Organization is interested in this subject. The International Sanitary Regulations contain a requirement whereby any nation can prohibit the discharge of sewage from vessels when they are tied up at ports or harbors or are operating on the inland waters of that country.

John Vogt has mentioned the fact that some six years ago we took an interim action under the terms of the Quarantine Regulations to delimit an area three miles around any water supply intake insofar as the discharge of vessel sewage was concerned. So far as we know, that standard has been adequate and the vessels operating on the Great Lakes, both American and foreign flag, have observed the instructions regarding the discharge of sewage.

There was a lot of fear at the time that the St. Lawrence Waterway was opened that we would import into this country certain diseases that are transmitted through the medium of water which are strange and foreign to our country, -- cholera, typhoid, and some of the other exotic water-borne diseases. At that same time, recognizing that the delimiting area was simply an interim action, we did convene an Inter-departmental Committee on Sewage Disposal from Vessels which included representation from several Federal agencies concerned with vessel operation. Mr. Mark will discuss some of the details of the deliberations of that group. The Committee included such organizations as the Maritime Administration, the Corps of Engineers, the Bureau of Ships of the Navy, Division of Water Supply and Pollution Control of the Public Health Service, and several other Federal agencies. In addition, it was necessary and desirable to have on the Committee representation and expression of thought at the State levels regarding the need for control of pleasure craft operating on intrastate waters. And after discussions with the Conference of State Sanitary Engineers, they were good enough to name John Vogt as their representative to bring to the Committee the points of view of the respective State health departments.

About eighteen months ago, aided and supported by our Inter-departmental Committee, we proposed amendments to the Interstate Quarantine Regulations which required either treatment or the holding of sewage aboard vessels until it could be disposed of at appropriate points. The Regulations were submitted to the Secretary of Health, Education and Welfare for approval. However, no action has been taken on their formal promulgation. The delay stems in part from the question as to what degree of responsibility should be assumed by the Federal Government in the control of sewage discharge from pleasure craft.

We would like to see national standards covering sewage disposal from pleasure craft. I believe the manufacturers would like to see uniform national standards. The difficulties of trying to operate under some 50 different sets of rules and regulations as they may be promulgated by the respective states would be an almost intolerable situation.

We need a testing and approval program to demonstrate that a given devise does provide the necessary and required degree of treatment.

Now, let me read from the contract that we have with the National Sanitation Foundation which clearly identifies the three basic objectives of this meeting:

1. To review the effluent criteria recommended by the Inter-departmental Committee on Sewage and Waste Disposal from Vessels (established by the Division of Environmental Engineering and Food Protection) as they may pertain to small type watercraft.

2. To establish criteria for the evaluation of the performance of devices designed to treat wastes so as to render them acceptable for discharge from pleasure type watercraft in accordance with the criteria established under Item 1 above.

3. To provide for the dissemination of information developed to all health agencies and other interested agencies and persons.

Out of this we hope to receive, in fulfillment of the contract, the printed proceedings from the National Sanitation Foundation containing the considered judgment of this group.

I wish you the best of luck on your Conference. I hope that you will produce some clear-cut guidelines that we can begin to apply.

Charles M. Davidson

Chief, Environmental Hygiene Bureau
Tennessee Valley Authority

TVA is mighty happy to have a part in this conference. We have lots of square miles of mighty fine waters in the Tennessee Valley area and we want to keep it that way. I would remind you that we have about 50,000 boats in the Tennessee Valley Authority lakes not counting those that are carried on the tops of cars or on trailers. We have noticed that there is a tremendous upsurge of cruisers and houseboats. I don't think it's peculiar to this area but our first count in 1957 showed that we had about 488 houseboats on the TVA lakes. Our most recent count is 3,800. There are many, many cruisers that started even earlier and inboards and cruisers have been increasing at the rate of about 100 a year. At this time there are about 3,200 of these boats on the lakes. Something like 6,000 of these boats have heads on them.

In 1948 we made a water quality investigation of Chickamauga Reservoir. We continue these at intervals and at the moment we are making one of each of the nine principal reservoirs. It takes about a year to do this type of a study on each one of the reservoirs. The study in 1948 in Chickamauga, particularly, showed unusually good water and we are very proud of that. There were many stations with median coliform concentrations below 10 per 100 ml. In our restudy of the same reservoir, we found in 1960 and 1961, that in spite of the many treatment plants, that cities and industries have put in, there is an increase in coliform organisms in some of these same stations.

We attribute some of this to the waste discharges from floating craft. You have listened to a gentleman here who has taken a good deal of my speech but who is concerned also about this problem. Certainly, the State and local health departments, the Stream Pollution Control Boards, the inter-state agencies, the Federal Government, the President of the United States, the citizen and the manufacturer are concerned. And it has been mentioned here that the Conference of State Sanitary Engineers took action on this in a resolution. The American Public Health Association passed a resolution about marine waste discharges. We should see what this resolution said:

"The rapid increase in the number of pleasure boats on inland bodies of water and on tidal estuaries and the increasing use of these boats and these waters for recreational purposes are contributing measurably to public health problems and water pollution in many places in the United States and international waters because these boats do not have devices or have inadequate devices to treat waste before discharge in the water."

The American Public Health Association believes there is immediate need for the establishment of design, operation and maintenance criteria, and a testing, evaluation and certification program of marine toilets and waste treatment devices by a public health oriented agency having competence to undertake such a program, or by a joint industry-public health group. "The Association encourages state and local health departments or other authorized water pollution control agencies to approve for use only such marine toilets and waste treatment devices that have been adequately designed, evaluated and installed and are capable of being operated in such a manner as will not under normal use create water pollution and other public health hazards."

That states the problem and this, along with the Conference of State Sanitary Engineers' resolution indicates to me that something ought to be done immediately. I have recently had correspondence with a good many of you, or talked to you on the telephone in regard to the problems of sewage disposal from pleasure craft. I made a fifty State investigation of what has happened and I've been gratified to learn that about half of the states in the United States have some legislation or regulations governing the discharge of waste from floating crafts.

The boat owner is one of principal people interested in clean water and this is a wonderful opportunity for him to be fully brought into the picture. He is the user of the water. We find so often at a commercial boat dock -- and this is where the congregation of houseboats and cruisers occurs, that this man on the shore has put in all the facilities that are required of him, good water supply and good waste disposal. Immediately these people that have boats -- and I am happy to see them -- lease spaces along the shore or on buoy lines from the boat dock operator and we see a great concentration of houseboats to whom he supplies electricity and drinking water. Families live on the boats a good many months out of the summer with all the waste discharged right into the area in which they are vitally interested in seeing kept clean.

So the average citizen has an opportunity here to do something about it. And, I think he wants to. I think the citizen is definitely interested in doing something. It isn't too much to ask of the boat owner to make or have made an installation of this type. It is relatively inexpensive and it will provide the means whereby he can have good, clean water.

The manufacturers are interested in this. We have noticed that a good many years ago they got into this field, and we are glad you did, to do something about it. I would like to say this just to remind you how this is going to affect all of us. We are going to need a lot more clean recreational waters in the future. At the moment TVA is developing a national recreational area. The Congress gave TVA the right and the opportunity and privilege to develop what we call the Land-Between-the-Lakes. Between the Cumberland reservoir, which has just recently been impounded by the Corps of Engineers and the Kentucky reservoir, which has been in use for many years, there is a strip of land, a peninsula 40 miles long, 6 or 7 miles wide. This entire 170,000 acres is being developed into a national recreation area. Part of it is already open. I hope you will have an opportunity to visit it.

So, we want to keep it clean, as clean water is going to be needed in abundance in the future. Some of us are not going to be around too much longer anyway. I've had the privilege of working in Public Health for about three decades and I'm sure you would as I would like to have it said: "He did something about it. He made it a little better environment than when he found it."

Thank you.

Richard S. Mark

Chief, Interstate Carrier Branch
Division of Environmental Engineering & Food Protection
U.S. Public Health Service

Mr. Hope gave you most of the composition of the Federal Inter-departmental Committee on Sewage and Waste Disposal from Vessels. I believe he missed at least two, possibly three memberships. The Coast Guard, the Maritime Administration, and the Department of Agriculture were also represented on the Committee. I want, particularly, to mention the Maritime Administration because, as you know, they subsidize merchant vessel construction and operation. In subsidizing merchant vessel construction, they will include a percentage of the cost when a company is willing to install sewage treatment processes.

When we receive advanced information that a company is going to construct a vessel, we immediately get in touch with the company to learn whether they plan to install treatment facilities. We encourage them to do so. We contact the Maritime Administration and urge them to make it known to the company that they will include a percentage of the cost of the installation in the cost subsidy.

If the company will not agree to put in sewage treatment equipment at this time, we urge them to set aside space for a time in the future when it will be required.

To return to the committee action, it met five times. The first meeting was in May of 1960. I will not go into the contact of every meeting. As I recall the first meeting, the most important item reported upon was the fact that the Maritime Administration had let a contract with a well-known engineering research organization to see whether normal known methods of sewage treatment for land based installations would be applicable for vessels that pass from salt water to fresh water and back to salt water, to see whether this change from fresh to salt and from salt back to fresh would have some effect upon the action of the biological treatment.

The report of this study was that there was very little, if any, adverse effect on the treatment process.

The fourth meeting of the committee was, I think, the most important from the standpoint of reaching a stage where some firm recommendations could be made. These recommendations were submitted to all the members of the committee, requesting their comments. At the fifth meeting of the committee, all of the comments were reviewed and a final position or recommendation taken by most, if not all, members. As I recall, there were few representatives that had doubts on a few points, but generally, all representatives agreed to the following:

First, that all new vessels, or vessels undergoing conversion, that were to operate in interstate traffic, under the terms of the Interstate Quarantine Regulations, whould be equipped with facilities to treat waste from toilets, urinals and facilities in hospital areas that handle fecal material and waste from garbage grinders when such grinders are installed. In lieu of treatment, the Committee recommended that the waste be collected in holding tanks properly equipped with pumps and piping so that the waste could be discharged to an approved shore based or floating facility.

As to the design flow rate, it was recommended that the treatment facility or holding tanks be designed on the basis of an average flow of at least 30 gallons per capita per day.

There was considerable discussion in previous meetings about a cutoff point where a more advanced type of treatment would be required. Some thought that this might be based upon tonnage or size of the vessel, but it was finally recommended that it be based on population. For vessels with a normal complement, that is passenger and crew, of 41 or more, the minimum treatment should be such as to produce an effluent of 50 parts per million, or less of B.O.D., 150 parts per million or less of suspended solid and 1,000 coliform or less per 100 ml. It was recommended that facilities be provided for the storage of excess sludge for proper disposal to approved land based facilities.

For vessels with a complement of 40 or less, minimum treatment should consist of passing the waste through a grinder, followed by disinfection which would produce an effluent having 1,000 or less coliform per 100 ml.

In regard to disinfection,it was recommended that method of disinfection equally effective as chlorination be acceptable in order to produce an effluent meeting the coliform requirements specified in the two previous paragraphs.

The committee considered what to do with the problem of grease. It was recommended that all galley wastes, exclusive of ground garbage, which might contain grease, should pass through grease interceptors prior to their discharge overboard or to the treatment unit aboard the vessel. Where grease interceptors are installed, the grease collected should be disposed of by incineration, stored for disposal ashore or discharged overboard on the high seas. Note, the "high seas", not the navigable waters of the United States. Grease interceptors should be designed and installed in accordance with applicable provisions of the National Plumbing Code, ASA A-40.8.

On the basis of these recommendations, as Mr. Hope mentioned, the proposed amendment to the Interstate Quarantine Regulations was prepared and submitted to our legal counsel. It was pointed out to us that the Surgeon General does not have the authority to require construction standards. Therefore, the proposed amendment was revised as a performance standard. We also learned from the legal counsel that there was authority to require the same from foreign flag vessels. There are actually two amendments in the office of the Secretary, one which would amend the Interstate Quarantine Regulations and the other which would amend the Foreign Quarantine Regulations.

I think this is all I have to report except that I know that industry is willing to proceed but that they want to know what they must do.

I've talked to the Propeller Club of America. I've talked at various shipping industry meetings and talked to shipping people and, in all cases, they have been receptive. One local Propeller Club member, much to my surprise, when I had finished my talk, said: "Oh, we've already gone on record with the National Propeller Club in regard to a resolution that something be done to regulate the discharge of sewage and waste into the harbors of the United States."

William Kehr

Project Director, Great Lakes Project
Federal Water Pollution Control Administration

The Federal Water Pollution Control Administration has been assigned certain responsibilities in connection with the disposal of sewage and wastes from vessels. The areas of our responsibility are covered by legislation and by Executive Order 11288. (Note: This Executive Order was originally designated 11258.) For those who may not be familiar with our programs, I would like to review the legal basis for our activities related to vessel waste disposal and tell you something of what we are doing and planning.

First, Section 3A of the Federal Water Pollution Control Act, as amended, reads as follows:

"The Secretary shall, after careful investigation and in cooperation with other federal agencies, and with state water pollution control agencies and interstate agencies, and with the municipalities and industries involved, prepare and develop comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries thereof and improving the sanitary conditions of surface and underground waters."

In compliance with this provision of the Federal Water Pollution Control Act, the nation has been divided into a number of drainage basins and, for each of these, there will be developed comprehensive programs for the control or elimination of pollution.

In the development of these programs, we must consider all legitimate water uses. To the extent that pollution from vessels or from any other source might influence the water quality in such a manner that it would interfere with or prohibit the use of water for certain beneficial purposes, the Federal Water Pollution Control Administration is concerned. In the development of these programs, it will make recommendations for remedial measures which would prevent interference of water uses or deterioration of water quality by this particular source of pollution.

The second of the three areas of responsibility is contained in Section 5-F of the Act. Here again, I will read a brief excerpt from it:

"The Secretary shall conduct research and technical development work and make studies with respect to the quality of the waters of the Great Lakes, including an analysis of the present and projected future water quality of the Great Lakes under varying conditions of waste treatment and disposal. An evaluation of the water quality needs of those to be served by such waters, an evaluation of municipal, industrial and vessel wastes treatment and disposal practices with respect to such waters."

Under this Section the Administration is concerned with research and studies of the waters of the Great Lakes leading to the control of pollution originating from vessel waste pollution as well as pollution from other sources.

My particular responsibility as the Project Director for the Great Lakes-Illinois River Basins Project is the development of comprehensive water pollution control programs for the Great Lakes and the Illinois River basin.

In the development of these programs we will consider the problem of vessel waste disposal to the extent that it may interfere with or inhibit various water uses.

The third area of responsibility is contained in Executive Order No. 11288, which is concerned primarily with the prevention, control and abatement of water pollution from Federal installations and activities. Section 8 of this executive order is devoted to a study of water pollution from vessel operation. It reads as follows:

"The Secretary of Health, Education and Welfare shall make a comprehensive study of the problem of water pollution within the United States caused by the operation of vessels and shall develop such recommendations for corrective or preventive action as may be appropriate, including recommendations with respect to vessels operated by any department, agency or establishment of the Federal government. The results of the study and recommendations shall be transmitted to the President by January 1, 1967."

In connection with this latter responsibility, I would like to outline for you the principal elements of the program which the Federal Water Pollution Control Administration has in mind to fulfill this responsibility.

First, to develop a nationwide assessment of the extent of the pollution problem caused by the operation of federal vessels and its relation to the over-all problem of vessel pollution. For this purpose, we have developed a study plan and are now in the process of conducting the study under the direction of the Pacific Northwest Water Laboratory. One part of this study will involve a special project which will be undertaken in San Diego Bay.

Second, to assess the significance and status of the control of pollution from recreational boating. At the present time the plans for such a study have not been detailed.

Third, to review the work and recommendations of the Inter-departmental Committee on Sewage and Waste Disposal from Vessels.

Fourth, to evaluate the adequacy of presently available shipboard facilities for collecting, holding and treating wastes.

Fifth, to undertake research and pilot plant operation to develop improved methods for abating and controlling pollution from vessel operation.

From the nature and scope of these study areas that I have outlined it might appear that there is considerable overlapping between activities which normally are the province of the Public Health Service and those of the Federal Water Pollution Control Administration. This situation has resulted from the recent shift of the Administration to the Department of the Interior.

As Mr. Hope indicated a few minutes ago, there is at the present time being developed an inter-agency agreement which will define the specific areas of responsibility for the Department of Health, Education and Welfare and the Department of the Interior. Until such time as this document has been completed and approved, the nature and extent of vessel waste studies to be undertaken by the Administration must be considered tentative. We are, of course, proceeding with the comprehensive water pollution control program development and are greatly interested in this problem. We will encompass vessel waste disposal in this activity.

So far as the activities defined in the President's executive order are concerned the Administration has established a Federal Installation Activity to which this problem has been assigned. The actual scope of their operations in areas where dual responsibilities exist must await finalization of the inter-agency agreement.

Merlin E. Damon

Sanitary Engineer
Macomb County Health Department, Michigan

Certainly this is a pleasure and privilege for me to talk with you this morning on a subject that has been of some concern in our area and I am certainly looking forward to the benefits which will be received from this conference.

As indicated, we are located on the eastern part of Michigan. If you take Michigan as a hand print, basically from the lower part Lake Erie to Lake Huron, and this includes the Detroit River, Lake St. Clair, the St. Clair River and portions of Lake Huron, we have a little over 400,000 watercraft registered in this area. A great many of these watercraft do utilize Lake St. Clair for their recreational pursuits. This has been a subject that I felt, as far as Macomb County is concerned, needed some attention in the past; and I started to seek this attention by talking with some of the local and state officials about possible controls of the discharges from recreational watercraft. I found very shortly that I was a little bit embarrassed. They asked me many questions which I could not answer. I thought I knew what the problem was but I couldn't explain it to them. So, we set out on the possibility of doing a survey and, in cooperation with the Michigan Department of Health, and U.S. Public Health Service, we came up with a limited report. This report has been passed out to you.

The unfortunate thing about the report was, that we set out with a proposed budget of about $16,000 and we were unsuccessful with the federal people in coming up with very much money, in fact, no money. They did, however, allow us to have one man for three months. In the end, all I had to operate on basically was $2,100 from my own Board of Supervisors. The State Health Department did send in and pay for some of their staff and some testing work that was carried on.

Our report is limited, however, if it is of any value to anyone, please use it. Basically, we have carried on three sections of this program. The first one that I'm going to talk on is the questionnaire that we developed and attempted to hand out to watercraft owners and operators. The second part of the program was an observation type thing in which we hoped to learn about some of the habits of the operators of watercraft, how long they were away from port, and so forth. The third portion was a water sampling program that we developed in and around our marinas.

First of all, I would like to speak just briefly about our questionnaire. This was developed and headlined, "May We Have Four Minutes of Your Time?" We had about 5,000 of the questionnaires printed. We handed out all of the 5,000. However, in our desire to reach as many groups, as well as individuals, I am sure that these questionnaires were handed out in duplicate in some cases. We asked the power squadron, the Clinton River Boat Club, yacht clubs, etc., to help in distributing these questionnaires, as well as going to each marina and putting them on the watercraft. So, I am sure there was some duplication in that respect. However, we did have a return of nearly 1,200 which, we felt, was a representative sample and we're very pleased with this return. The information was confidential in that the people did not have to sign their name, if they did not wish to. They had self-addressed return envelopes - all they had to do was drop them in the mail - also down at the bottom we had a place for comments and I think this was the most interesting part of the entire program. We got everything from philosophy to some things that weren't philosophy. Nevertheless, it was very interesting.

I would like to go over some of the answers, that we did get, very hurriedly. As to the type of boats - we had 908 that were listed as inboard, 111 outboard, 68 inboard or outboard and 81 sail. Of these watercraft, 892 were equipped with galleys, 1,021 - well this is again keeping in mind out of 1,100 and some odd returned - claimed they had heads; 67 had showers and 137 not stated.

"Do you stay on your watercraft while tied up at a boatwell?" Seven hundred and seventy "Yes"; 379 "No"; 21 not stated.

"In your opinion, should marinas furnish toilet facilities at the dock?" One thousand and eighty nine "Yes"; 52 "No"; 29 not stated.

This next question, although we did not put too much weight into the results, we figured out afterward, that we are dealing with human beings here and probably not all are engineering oriented, as we who made out this questionnaire were, but if the answer was "Yes", to the above question, then "How far would you expect to walk to such facilities?" Forty eight would walk 50 feet; 166 would walk 100 feet; 197 would walk 150 feet; 393 would walk 200 feet; 236 would walk further than 200 feet; and 49 not stated.

If you will analyze this a little bit, the majority are willing to walk considerably over 200 feet to get to toilet facilities. The reason we don't put too much weight into this is that if I asked ten different people here in the room to give me the dimensions of this room, I probably would come up with ten different answers. I'm not sure how many of these people knew how far 200 feet was.

Were the facilities at marinas clearly marked, 458 "Yes"; 98 "No". This is an area that we can do something about locally.

"Do you have a special container on your boat to store garbage or trash?" One thousand and eighty two, "Yes"; 74 "No". Here is where some of the honest people came in -- "Where do you empty your trash containers?" Nine hundred and ninety five placed trash in containers. I assume this is at the marina. Three hundred and sixty one took the trash back home; 78 people dumped it offshore in the deep water.

"How would you judge the collection and storage of trash and garbage of the marinas or harbors that you use?" Six hundred and seventy said: "Satisfactory"; 367 said: "Fair"; 98 said: "Poor".

Now we get into the sewage treatment end of it.

"Would you favor the use of a holding tank for liquid waste from the head in lieu of a treatment device such as a grinder-chlorinator?" Three hundred and eighteen "Yes", 632 "No". In other words, one-third of them, answering this particular question, would prefer a holding device and two-thirds a treatment device that would deposit the effluent overboard.

Another question, "Do you transport your boat by trailer and use various docking facilities?" Of those answering our questionnaire, 83 said "Yes", 825 said "No" and 262 not stated.

Well, this just gives you some of the basic types of things that we were after to get a public opinion, so-to-speak, of the facilities and how they used their watercraft.

In addition to this, we established on weekend and holidays, observation crews where would place the men at strategic points in our marinas or near our marinas where they would try to count and record the boats or watercraft that left the marinas and returned to the marinas.

Again, because of limited funds we were only able to talk our own staff into working from 7:00 in the morning to 10:00 at night, and, because of this necessity, we have recorded both Completed Observations and Incomplete Observations. The majority were Incomplete Observations. This merely means that either the watercraft left the marina before we got there at 7:00 o'clock in the morning, or it left later on but returned after we left the observation point at 10:00 o'clock at night.

What we were attempting to do here - and this involves a matter of judgment - was to, first of all, classify the watercraft small, medium and large and, of course, as you realize, this like our "walking distance" might be different to different people, particularly to those of us who don't have boats. The other thing was that they attempted to count as best they could the number of people that were on these watercraft.

We had 2705 of the Completed Observations - in other words those they clock out in the morning and in later on in the day - and 4125 of the Incompleted Observations.

Of the Completed Observations, the small watercraft ahd 3.1 average persons aboard; medium 3.56; and large 4.1. Of the Incomplete Observations, 3.18 small; 3.4 medium and 4.0 average persons on the larger watercraft.

The average number of hours away from port, of course for the Incompleted Observations, again the majority of our observations, were from 6.66 to 7.20 hours and from there on, because they are incomplete. This led us to believe that the majority, at least of the boats on the weekends and holidays, were staying away from their home port greater than 6.6 hours and up to 7.20 and beyond.

Lake St. Clair, basically, is twenty-some-odd miles long and about 35, I believe, wide. It is a very shallow lake. The deepest point in the lake, other than the shipping channel, is only 21 feet.

I bring this out because it did have a slight effect on our sampling program and I will point this out a little later on, but in the County we start with three stations on the Salt River and then go down to our main river basin outlet on the Clinton River and then down to what I will call the Nine Mile Marina Complex.

Our sampling procedure consisted of taking three samples a day seven days a week, on alternate days from each of these 14 sampling points. Later on we did run a concentrated survey which included B.O.D, D.O.'s, Chlorides, etc., I think, to make it very short, we did not prove anything conclusively with our sampling program. We could not prove that the marinas were damaging the waters nor could we prove that they weren't. The only thing that we came even close to is the fact that this is a shallow lake and, when storm warnings go out, the watercraft come in very rapidly. We had the MPN increase from 2,400 to millions almost immediately where the watercraft churned up the water immediately before a storm, they were coming in that fast. It is said, and I believe to be true, that on a busy weekend that you are much safer on one of our expressways than you would be on Lake St. Clair battling with the boats.

We had hoped that perhaps we could choose some other place in the State where the basic water quality in the stream or in the lake is of a higher or better degree of purity than our area and then check this against some marina in the vicinity. Unfortunately, we still have not been able to accomplish this part of the program. I think that basically if you are interested in this phase of the survey, you can get more details and facts from the report.

I would like, in closing, just to go over with you the summary and conclusions.

1. The study project, sampling program, and distribution of the questionnaire created a goodwill feeling among owners of marinas and owners of watercraft and demonstrated that an all-out effort was being made to obtain facts on which to base control measures if it was determined that such measures were needed.

2. While the study was designed to obtain data relative to sewage pollution and sanitation conditions at marinas it was evident from statements made under the item "Comments" on the questionnaire that there was great interest in watercraft safety (reckless driving, operator training, and operator licensing) and pollution other than sewage, i.e., trash, garbage, beer cans, wood or other floating debris.

It was interesting to note from the ones who answered the questionnaire - some were also skin-divers - that, firmly believe that there is enough metal under Lake St. Clair to carry on quite a project if we ever needed it, along with other things that are down there. It was also interesting to note many of the people returning the questionnaire asked, "Why pick on us? We're only little fellows. Pick on the big boats that travel out there that throw all their garbage and stuff overboard." Mr. Vogt and I had the opportunity to sit down with the Great Lakes Shipmasters Association and they said: "Why pick on us? We're only a few hundred boats. You've got thousands of the little ones out there." So, this becomes a matter of picking and choosing. However, I am pleased this morning to learn of the progress that is being made with the larger vessels. Also, it was interesting to find out about the great controversy between the Great Lakes Ship Masters and the "salties". If you want a real good discussion going some day, get two of those gentlemen together.

3. The bacteriological sampling program showed that the water quality at six of the fourteen stations was extremely variable with high coliform concentrations a significant percentage of the time. The eight remaining stations showed a water quality quite variable with coliform concentrations under 2,500 for 95% of the time and no statistically significant difference detectable among these stations.

(Along this point, I think that we did prove by some of our controls both positive and negative that the data that we have collected over 17 years on our public bathing beach program was pretty reliable and this fell in line pretty well.) The water quality at all stations was so variable that there was no statistically significant difference between any two stations or groups of stations. It was therefore not possible to measure the effect of pollution which might be contributed by a marina area into adjacent waters whether this be a stream or along the shoreline of a lake.

4. The stations which showed the highest chloride concentrations also showed some of the highest biochemical oxygen demand concentrations and in nearly the same order namely (4, 5, 1, 2, 8 and 3) and (5, 4, 1, 2, 8 and 3) respectively. Concentrations actually decreased from a point on the river above the marinas to a point on the river below the marinas. The opposite trend would be anticipated if pollution from marina areas which might be detected by a sampling program was contributing a significant pollution load to the receiving stream in relation to pollution already in the stream as measured by these parameters.

5. At the time of establishing the sampling points there was little or no information relative to the water quality in streams in the marina areas. There was a considerable amount of data available from lake samples taken at the Metropolitan Beach located around the point below Clinton River outlet and southeast of Mr. Clemens, (this Metropolitan Beach, by the way, is the longest as I mentioned bathing area on a body of fresh water in the United States) and from several bathing beach areas between 8 Mile and 9 Mile Roads. The information obtained from the sampling program of the survey reveals that the water quality and wide variation of coliform concentrations is such, both in the Clinton River and along the shoreline of Lake St. Clair, that an added pollution load which might be contributed by marina areas to the adjacent waters cannot be measured with any degree of accuracy. It cannot be concluded, however, that there was no pollution being contributed to the waters adjacent to marina areas.

6. It is recommended that a stream or lake sampling study be conducted in one or more marina areas where the adjacent waters are of a very high quality and where other influencing factors are at a minimum to determine if it is possible to measure pollution which might be contributed by watercraft docked at such marinas.

7. Liquid discharge from watercraft was observed on numerous occasions while boats were docked at marinas and answers to the question "Do you stay on your craft while tied up at a boat well?" indicated that two-thirds of the owners use their watercraft in this manner.

8. Observations of watercraft use while away from home port indicate the majority of one day trips cover from 3-1/3 to 7 hours on the average and it is evident that the head would be used under these extended use conditions. Since the high percentage of watercraft now in service are not equipped with holding tanks for sewage or macerator chlorinator devices, raw sewage is being discharged into the waters of the State from watercraft.

9. There was a strong feeling among the 1,141 persons that completed the question "In your opinion should marinas furnish toilet facilities at the dock?" 96% answered in the affirmative and 60% of those persons were willing to walk 200 feet or more to such facilities.

10. Of the 950 persons that expressed an opinion regarding holding tanks for sewage aboard watercraft, only 318 or 33% said that they would favor them over a treatment device including a grinder or chlorinator.

- There is only one other point that I wanted to cover and that is again to remind all of you that what I've been talking about here, other than the Clinton River and the Salt River, that we are talking about international waters. We did have the cooperation of the Huron-Clinton Metropolitan authority who have a marina in conjuntion with their recreational facility. They handed out the questionnaires to their weekend visitors that tie up at their marina and we did have a considerable number of returns from Ontario, Pennsylvania, New York, Illinois, Ohio and, I think, we had one from Wisconsin. This helps to point up some of our problems in that we are dealing with international waters and that makes it just one step more difficult.

I think this basically covers our program and if anyone has any questions that I can answer later on, I will be glad to talk to them.

Ralph C. Pickard

Director, Division of Environmental Health and
Executive Director, Water Pollution Control Commission
Kentucky State Department of Health

It is certainly gratifying that at long last the problem of pollution from boats is beginning to command the attention of the public. Water pollution agencies became interested in this matter some years ago and several states have taken action both wise and unwise to do something with respect to this mounting pollution problem.

The unprecedented growth of the boating industry has brought the problem of disposal of wastes into sharp focus. Closely allied to this growth has been the tremendous interest of the general public in such water contact sports as skiing, surfboarding and swimming. This interest is not restricted only to the young but now includes persons of all age groups.

It is also worthy of note that perhaps the greatest percent of growth has come with the development of man-made inland lakes created for the most part through the use of federal funds. The noteworthy contribution of the water pollution agencies toward the elimination of sewage from our rivers has encouraged increased use of these waters for recreation.

As one example, boating statistics will show that approximately 15,000 boats are registered in the Cincinnati Pool of the Ohio River and an additional 5,000 - 7,500 are operating in the Louisville Pool.

Of major concern to water pollution authorities is the increased use of the cabin cruiser type boat.

These facilities have become a major attraction for weekend and vacation activity for families. During the summer some families practically live on these cruisers and literally thousands of families board such boats on Friday night and leave on Sunday night.

It is not uncommon to find hundreds of such crafts anchored in coves and families actually living on board during the weekend. The contribution, therefore, of the wastes to such sheltered inlets and to the river in general has become a major concern.

In response, the Conference of State Sanitary Engineers discussed this problem at length and resolved to begin an attack on this uncontrolled pollution. In the 1963 annual meeting of the Conference the following resolution was adopted:

SEWAGE AND WASTE DISPOSAL FROM VESSELS AND PLEASURE CRAFT

WHEREAS, the problem of sewage and waste disposal by pleasure craft operating on inland waters and lakes is increasing at an extremely rapid rate, and

WHEREAS, the public health hazards resulting from the promiscuous disposal of sewage and waste from such craft into the water on which they are operating are of increasing interest and concern to State and local health agencies, and

WHEREAS, the small craft industry has indicated a desire for information from health and other control agencies on established standards and criteria for the disposal of sewage and waste from such craft, and

WHEREAS, technical developments in the manufacturing of suitable devices have been delayed due to lack of resolution of the needs in this regard, and

WHEREAS, it is necessary to protect the recreational aspects of the water on which these craft will operate and at the same time provide public health protection to water supplies taken from such sources, and

WHEREAS, the Public Health Service does have certain legal responsibilities insofar as it relates to the discharge of sewage and waste from vessels operating interstate, and

WHEREAS, the Federal Interdepartmental Committee on Sewage and Waste Disposal from Vessels established by the Public Health Service is currently considering the issuance of a policy statement regarding criteria for the disposal of such wastes: Therefore, be it

RESOLVED, (1) that the Conference of State Sanitary Engineers urge the Public Health Service through its Interdepartmental Committee on Sewage and Waste Disposal from Vessels to expedite the issuance of the policy statement governing disposal of sewage and waste from vessels, and (2) that the Conference of State Sanitary Engineers provide leadership in the development of test protocol for sewage and waste treatment devices for pleasure craft and cooperate in the development of an acceptance program for these devices through a recognized national testing and evaluation laboratory, such as the National Sanitation Foundation: And be it further

RESOLVED, that the Secretary be instructed to transmit a copy of this resolution to boat manufacturers and the manufacturers of waste treatment devices for pleasure craft, the National Sanitation Foundation and other similar testing laboratories.

In furtherance of its aims, the Conference further attacked the problem in its annual meeting of 1964 with the following:

STATEMENT OF POSITION OF EXECUTIVE BOARD
CONFERENCE OF STATE SANITARY ENGINEERS
RELATIVE TO CONTROL OF POLLUTION FROM
PLEASURE CRAFT AND MARINAS

The Conference of State Sanitary Engineers recommends to the Association of State and Territorial Health Officers

a. That each State and Territorial Health Officer encourage the adoption of uniform State laws relating to the control of pollution from pleasure craft and marinas.

b. That each State develop or strengthen educational programs to acquaint the boating public with the problem and need for methods of pollution control.

c. That the ASTHO support the establishment of a mechanism whereby pollution control devices for recreational watercraft can be evaluated in accordance with recognized public health principles.

The Conference of State Sanitary Engineers recommends to the Conference of State and Territorial Health Officers

a. That the Public Health Service develop a full-scale program of technical assistance to be carried out in cooperation with State agencies involved in the control of pollution from pleasure craft and marinas in lakes and small harbors; and take steps to develop a model uniform State law relating to the control of such pollution.

b. That the PHS join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational water craft pollution control devices would be endorsed: to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

The above position statement was transmitted to the Association of State and Territorial Health Officers for action at the 1964 annual meeting of the Association. The official proceedings of the annual meeting reveals the following action:

The State and Territorial Health Officers recommend that the Public Health Service join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational watercraft pollution control devices would be endorsed; to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

The State and Territorial Health Officers recommend that the Public Health Service develop a full-scale program of technical assistance to be carried out in cooperation with state agencies involved in the control of pollution from pleasure craft and marinas; and take steps to develop a model uniform state law relating to the control of such pollution.

The Association recommends:

A. That each state and territorial health officer encourage the adoption of uniform state laws relating to the control of pollution from pleasure craft and marinas.

B. That each state develop or strengthen educational programs to acquaint the boating public with the problem and need for methods of pollution control.

C. That the State and Territorial Health Officers support the establishment of a mechanism whereby pollution control devices for recreational watercraft can be evaluated in accordance with recognized public health principles.

It is also significant to note that on January 9, 1964, the Ohio River Valley Water Sanitation Commission in recognition of this pollution of the Ohio River adopted and issued a "Notice of Intent regarding Wastes from Boats and Floating Facilities" and known as ORSANCO Resolution No. 1-64. It reads as follows:

WHEREAS: The discharge of untreated wastes from commercial and pleasure watercraft and floating facilities operating within the Compact District may cause pollution contrary to the language and intent of the Ohio River Valley Water Sanitation Compact; and

WHEREAS: Substantial progress has been made in eliminating discharges of untreated wastes from municipalities, industries and other on-shore installations in the District;

NOW, THEREFORE: For purpose of safeguarding the waters of the District as specified in Article I of the Compact;

BE IT RESOLVED: That the following measures are hereby adopted by the Commission to be followed by the signatory states for the joint cooperative control of waste discharges from watercraft and floating facilities, such measures to become effective January 1, 1967:

1. No marine waste-disposal system on any watercraft or floating facility operated on waters within the District shall be so constructed and operated as to discharge inadequately treated wastes into these waters.

2. All marine waste-disposal systems shall be sealed or otherwise rendered inoperative on waters where use of such systems is prohibited by federal, state or local regulations.

3. On waters within the Compact District where the operation of marine waste-disposal systems is permitted, such systems on or within any watercraft or floating facility shall include a suitable, operating treatment device for the maceration and disinfection of wastes prior to discharge In lieu of treatment, wastes from watercraft and floating facilities shall be collected in holding tanks properly equipped so that the wastes can be discharged to approved shore-based installations.

BE IT FURTHER RESOLVED: That the Commission request that each of the signatory states take steps to carry out the provisions of this resolution; and

BE IT FURTHER RESOLVED: That the Commission direct the Engineering Committee to provide a guide-line memorandum for use in implementing this resolution; and

BE IT FURTHER RESOLVED: That, following the effective date of this resolution, the U.S. Coast Guard and appropriate signatory state enforcement agencies, in connection with their routine licensing inspections of watercraft and floating facilities operating within waters of the Compact District, be requested to report to the appropriate state agency or to the Commission those watercraft and floating facilities not complying with this control measure.

At the 1965 annual meeting of the Conference of State Sanitary Engineers, the official position statement of the Public Health Service and the Conference was officially adopted as follows:

POSITION STATEMENT OF
PUBLIC HEALTH SERVICE AND CONFERENCE OF STATE SANITARY ENGINEERS
ON EVALUATION AND TESTING OF
SEWAGE TREATMENT AND DISPOSAL DEVICES FOR USE ON
PLEASURE BOATS AND OTHER SMALL CRAFT

The Problem:

It has been recognized by health officials and water pollution control authorities at all levels of government that the increasing discharge of untreated sewage from pleasure boats and other small craft into our water resources is contributing to pollution problems in many areas of the country. A variety of sewage treatment devices for boats is now becoming available on the market. The Conference of State Sanitary Engineers' Executive Committee adopted the following statement in 1964:

That the PHS join with the Conference of State Sanitary Engineers in preparing criteria under which an organization evaluating recreational watercraft pollution control devices would be endorsed: to assure such an organization's capability to conduct the necessary engineering, public health, and related studies.

The Association of State and Territorial Health Officers in 1964 adopted the following recommendation:

That the State and Territorial Health Officers support the establishment of a mechanism whereby pollution control devices for recreational watercraft can be evaluated in accordance with recognized public health principles.

Scope of Evaluation:

Comprehensive evaluation of marine sewage treatment and disposal devices should include: efficacy of microbiological and particle size reduction; economy and installation factors, reliability of mechanical operation; discharge of an effluent meeting adequate public health and sanitation standards; and general safety of the devices. The evaluation should be conducted under conditions of use including fresh and salt water environments.

Criteria:

To provide a basis for evaluation of marine sewage treatment and disposal devices and to assure inclusion of adequate public health principles therein, uniform water pollution and national public health criteria should be developed. The development of such criteria should be done on a cooperative basis by a joint committee of professional public health and water pollution control personnel, user groups and manufacturers.

In the position statement of the Public Health Service and the Conference of State Sanitary Engineers as well as in other statements and resolutions there has been the underlying theme that the evaluation, testing and criteria development for sewage treatment and disposal devices for use on boats be soundly based in an organization capable of conducting the necessary engineering, public health and related studies. You will note further the ASTHO in its 1964 recommendation stated that "pollution control devices for recreational watercraft be evaluated in accordance with recognized public health principles."

It is also worthy of note that in addition to the above assurance, is the statement of PHS and CSSE that "the development of such criteria should be done on a cooperative basis by a joint committee of professional public health and water pollution control personnel, user groups and manufacturers." To this philosophy I wholeheartedly subscribe.

In addition, I further subscribe to the need for uniformity, in laws, regulations and testing. Anything less would, in my opinion, be chaotic to the manufacturers in attempting to satisfy the fifty states.

Because of the demonstrated ability of the National Sanitation Foundation in coordinating and conducting similar operations in other fields of endeavor where all interests must be represented, I consider the Foundation to be uniquely qualified to undertake this responsibility.

It is my hope that no time will be lost in developing the program. Those of us in the pollution control field are experiencing pressure to develop our regulatory controls and for those of us in the Eight State Compact we have a resolution to comply with effective January 1, 1967.

S. Leary Jones

Tennessee Stream Pollution Control Board
Tennessee Department of Public Health

The Tennesse Stream Pollution Control Board adopted last November in Tenessee regulations dealing with boat pollution, houseboats and floating boats. We're not sure, one phase of it, whether it applies to boat docks or not, but if it doesn't the existing Stream Pollution law does apply. The Board decided to adopt a regulation because during the last two General Assemblies there have been laws drafted dealing with boat pollution, some very drastic and some very foolish that would cause more confusion than anything else. We decided to start our own confusion and sometimes that is necessary. We stuck our neck wayout out.

The regulation is not different. It is very similar to ORSANCO'S and, with their permission, they allowed us to use two or three of the words they used. We picked the definitions out of our own law, the common definitions defining sewage. We had some wild suggestions from the group to which we sent proposed regulations. Someone suggested that all of the shower water ought to go through the chlorination unit. It almost became written into the regulations before we found out it could not be done that way. And we had the usual wild suggestions. We did not put the litter law into the regulations because at present there is a very adequate litter law that cannot be enforced, and there wasn't any sense having two.

In Tennessee it will cost you $25.00 minimum for each beer can that you throw in the lakes, and/or ten days in the workhouse. I don't know anyone who has been in the workhouse, not on that charge anyway. It can be enforced if you have enough people up and down the lake. This must be accomplished by education and the same thing is true, we think, on this boating law. As Charlie (Davidson) mentioned, we have a lot of boats in the Tennessee Valley - around 60,000 - probably a third of those with heads - maybe half. We have quite a few more up on the Cumberland. The Mississippi will not have a large number - there will be some down there but right now it's not suitable for recreation. This is not caused by the pollution that you read about in the Saturday Evening Post. It's due to the fact that it's too doggoned dangerous to recreate down in the Mississippi River right now. Logs run over you. The minimum current, I think, is four miles an hour. It's rough down there and it's not due to the endrin and the other pollution that has been such a national scandal. In fact, Congressional hearings have been a lot of fun and we've had a lot of fun on that. Anyway, we now have a regulation in Tennessee on boat pollution that is very similar to the model act.

We unfortunately drafted it and the Board adopted it before we saw the model act. Yet, it came from some of the model acts. I won't go into the details of the act but I would be glad to send any of you a copy of it. We have sent it, I think, to all the manufacturers. We've asked each of them, more or less for certification, that their unit will meet these regulations. This is a backhand way of doing some thing and that we do not like. This is why we have been so interested in writing back and forth to the National Sanitation Foundation off and on for about a year hoping that they would make the tests on such a unit. We cannot test it with our Stream Pollution Board facilities, nor is there anyone in Tennessee that could run adequate tests; they are capable of doing it but do not have the facilities. And you needn't kid yourself that you can put a unit on one boat and take three samples and test it. It cannot be done that way. So, we are very much interested in this Foundation making such tests.

If this is done, our regulations, we're quite sure, will be changed to require certification of the National Sanitation Foundation or any other acceptable organization that can run adequate tests. We did not hear from one or two of the companies. We have another letter that is supposed to go out this week asking for this information because our Board met two Fridays ago.

We have to get a list out because people are standing in line to buy units and here we are going to - this is the confusion. We are going to get out a list before anybody runs the tests to decide whether the units are acceptable. The public is going to raise the devil about the fact that the units are listed prior to adequate tests being made. This is very unfortunate. Our regulation is in effect now. The deadline is January 1, 1967 that all boats in use must have approved units installed. We are quite sure that some year from now this will become a law, rather than a regulation. As a regulation it is very cumbersome to enforce. We would have to hold a hearing, issue an order and turn it over to the Attorney General to file suit in Chancery Court of Davison County. It is a very effective way, but a little slow. We're quite sure that there will be a law some year hence that will simply require that unless the boats have such a treatment unit, they will not be licensed in Tennessee waters. We have discussed this with the licensing agency. They are in favor of it. They are anxious to go to the Legislature at this time, but I think it is too soon.

We are not sure that all of the boats will have units installed by January 1, 1967. We are quite sure if they don't we are not going around and count boats to find out whether they have them or not. We would like to but this will take time and personnel. We're short of both of those right now, but we think that adequate treatment must be provided on these waters. Now, we have had the usual answers that Mr. Damon mentioned on his survey of why pick on the little fellow. We have had two or three who said, by golly, they'll go to Panama and get the boat registered in Panama so that they will be a foreign boat. We said, "That's fine, we'll close the lock at Pickwick Dam and you can't come into Tennessee." They hadn't thought of that. I don't know how we would close it either.

We have four or five people who are designing new units now - and we hear from them every few days. One radio engineer said he can handle the electronics on the unit if we will handle the rest of it. Anybody can put the button on with some relays, but the comments, in general, were very favorable. We are getting wonderful cooperation out of the boating clubs and this is where it will be sold.

Also we are obtaining cooperation from the boat docks and the Fish and Game Commission which is the agency which licenses the boats. They are on the lakes most of the time. We are interested, primarily in the marinas and in the embayments where we do have a serious problem. You can't swim and dump sewage in the same water. You have to realize that. We have a lot of swimming in the Tennessee and Cumberland lakes. We'll have far more. At the present time, up on some of the Corps of Engineers' lakes, they simply prohibit houseboats for habitation - if that's a good word - you can't live on a houseboat on those lakes. Actually, they need a little more fertilizer in the water to raise more fish but right now they have prohibited houseboats being on there that you're living on. In general, the program is making a little sense. It's going to be slow but, based on the number of boats that are being sold every week down there, and based on the ones in the showroom, there will be a lot of boats down there. As soon as they go on this four-day week, so-called, and somebody gets enough money for gasoline for the boats, there will be a lot of recreating up and down the lakes. By the way, the croppie and bass are biting next week, too, if you want to come down and go fishing.

But, seriously, there is year-around fishing, and this is not just a plug for down there, but this is why there will be such an expansion of boats. We've had very few months or very few weeks that the lakes are frozen over and, on your main rivers and lakes, they are not, of course.

If any of you have any questions on this regulation we have without going into the details on it, because I forgot to bring one, I will try to answer. It is very similar to the others. It requires a unit. It is not specified as to the type of unit. It can be a holding tank. It can be a grinder-chlorinator or any such unit that will produce an adequate effluent. On solids, we did not try to specify the size solids, except they have to be small. We're the only ones that can interpret that. On the coliform bacteria we used the 240 per 100/ml. We are not disagreeing with the 1,000 figure. We've seen that a few places. The regulations require 240. We have no real preference because there is no real difference except that any unit that is adequately designed will produce a 240 coliform per 100/ml. effluent. We are quite sure that in average operation in the field it will not do that at all times. Neither will the sewage treatment plant that is designed to give you zero coliform,if you want to operate it that way. It isn't necessary to do it in all cases.

We still believe in using the stream for a reasonable amount of assimilative capacity. We're not in disagreement with the idea of high standards but we will not shoot for zero coliform in all the streams for the simple reason that we can't get it. We've got a lot of dairy herds in Tennessee and we cannot get zero coliform in the streams. You might as well face it. We've got a lot of wooded areas, we've got a lot of run-offs from streets that no one has found the answer for.

Ideally, you need this pristine pure water for the kids to swim in. We won't get it. We're kidding ourselves if we think we can shoot for zero standards and I don't think anyone sensible shoots for that.

C. Scott Clark
and
William L. Klein

Ohio River Valley Water Sanitation Commission
Cincinnati, Ohio

The disposal of wastes from boats and floating facilities has been under consideration by the Ohio River Valley Water Sanitation Commission for about six years. The first formal action by the Commission was in January 1964 when it passed a resolution* dealing with the control of wastes from boats and floating facilities. The Commission at that time believed that its industrial and municipal waste control programs had advanced far enough to warrant the development of a program in the watercraft field. Copies of a Notice of Intent embodying the resolution, officially designated No. 1-64, were sent to the eight states signatory to the Ohio Valley Compact -- Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia -- and to organization and companies concerned with such regulations. The Commission's requirements become effective on January 1, 1967 -- about three years after their adoption. The adoption of the resolution and the issuance of the notice of intent was the culmination of many discussions in the Commission and by its staff working in conjunction with the American Waterways Operators, the U.S. Public Health Service and the Outdoor Boating Club. The resolution was adopted by the Commission for promulgation by each of the states signatory to the eight state compact.

Guidelines to implement the uniform application of the resolution are currently under discussion. The resolution contains the following three elements:

(1) "No marine waste-disposal system on any watercraft or floating facility operated on waters within the District shall be so constructed and operated as to discharge inadequately treated wastes into these waters."

The Commission is concerned here with the treatment of toilet wastes only. We are of the opinion that galley wastes can best be handled by a separation of solids for their disposal at approved shore-based facilities. The disposal of such kitchen wastes is being promoted by our anti-litter program, which is being carried forward by the states in cooperation with the U.S. Coast Guard, the Corps of Engineers, and our Petroleum Industry Advisory Committee. One portion of this program consists of the distribution of plastic litter bags. Last year the Commission purchased several thousand of these for distribution by the states and by the Coast Guard. In addition, several oil and other companies purchased quantities for distribution by their dealers, and had their advertisements placed on the back. The Commission is willing to loan its color plates for the front side of the bags to those organizations who wish to make use of them.

(2) "All marine waste-disposal systems shall be sealed or otherwise rendered inoperative on waters where use of such systems is prohibited by federal, state or local regulations."

Indiana, for example, prohibits the use of discharging toilets on most of its waterways. A number of water supply reservoirs and areas surrounding water supply intakes are protected from the use of marine toilets by federal or local regulations.

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*Text of resolution is appended to this paper.

(3) "On waters within the Compact District where the operation of marine waste-disposal systems is permitted, such systems on or within any watercraft or floating facility shall include a suitable, operating treatment device for the maceration and disinfection of wastes prior to discharge. In lieu of treatment, wastes from watercraft and floating facilities shall be collected in holding tanks properly equipped so that the wastes can be discharged to approved shore-based installations."

Other accepted treatment devices would include incineration and, of course, the trustworthy "bucket-type" system with disposal in a shore-based sanitary facility.

The Commission does not advocate connecting the shower, sink and wash basin in small pleasure boats to the same system that the head is connected to, for three main reasons:

1. The treatment device would have to be enlarged considerably over the one required for toilet wastes only.
2. Maceration and disinfection would do little to reduce the pollutional aspects of such wastes.
3. We really do not want garbage disposed in the surface waters but prefer disposal in shore-based facilities or by incineration. We have taken the attitude that a litter campaign would be a much more practical approach to solving the question of litter and garbage than trying to run everything through a treatment device.

Since the adoption of the Commission's Resolution 1-64, the Interstate Carrier Branch of the Division of the Environmental Engineering and Food Protection of the Department of Health, Education and Welfare, has proposed regulations applying to new vessels engaged in interstate traffic and to those undergoing major structural changes. Discussi by Mr. Klein of ORSANCO'S staff with Mr. Mark and Mr. Hope of the Interstate Carrier Branch revealed that there are no basic disagreements between the two proposals. The federal regulations have BOD and suspended solids restrictions on waste disposal from vessels with a compliment greater than 40. Since ORSANCO has only one vessel in this class, the Delta Queen, our major concern is not with such sizes. For the smaller size vessels the two proposals are essentially the same, each involving the maceration and disinfection of toilet wastes.

The staff of ORSANCO is of the opinion that at the present time there are three areas that need attention by all concerned. Briefly:

(1) <u>Uniformity of Acceptance of Treatment Devices Between States</u>

The towboat industry and pleasure boat operators are understandably concerned that a treatment device acceptable to one state might not satisfy the requirements of an adjacent state. Because of the current restrictions barring use of any discharging treatment device in some areas, it is not likely that agreement can be reached on a type of discharging device that can be used in all waters. However, a great need exists for a national mechanism whereby commercially available treatment devices can be evaluated and given a stamp of approval if they satisfactorily meet certain performance requirements. This evaluation mechanism would establish standards that could be used for testing these devices. Individual states could establish treatment requirements in line with those established nationwide.

I think that the performance standards for the treatment of sanitary wastes are generally agreed upon for most waters - maceration and disinfection to a coliform level

of about one Thousand per 100 ml. The National Sanitation Foundation, perhaps with a financial grant, is in an ideal position to perform such evaluation and approval functions.

(2) Enforcement of the Regulations

At the present time, state boating and water pollution control agencies are generally not in the position to vigorously enforce such a requirement. Loose enforcement could defeat the purpose of the treatment requirements. One suggestion that has merit is to make the treatment requirements a necessary adjunct to the safety requirements for obtaining a boating license. In the process of obtaining the boating license, the applicant, if his boat had toilet facilities, would have to state whether or not he had an approved treatment device. Additional license fees may be necessary to handle this added function.

(3) Documented Boats

This knotty question has been raised time and time again, but a satisfactory answer is yet to be forthcoming. Documentation laws were made to protect American vessels in foreign waters and were not intended to make these boats immune from other governmental regulation. If a federal law does not require treatment devices on all of these vessels, then the states might consider licensing them for this requirement. Hopefully, a treatment device satisfactory to one state would also be so for another state. The documented vessel would thus need to obtain a license only for its home state or the home state of the operating company. To exclude these vessels from the treatment requirement would be ignoring one of the largest sources of potential pollution.

Some persons may think that raw sewage and debris from watercraft and floating facilities is only a small and insignificant problem. In terms of total pounds of BOD it may be, but in terms of esthetic insults and unsanitary practice in local areas of human use it is not. A flotilla of boats in a large marina can create a substantial nuisance to those using the adjacent waters, especially on a busy weekend afternoon. We believe that boating interests are willing to cooperate as long as the enforcement agencies can establish reasonable and uniform requirements.

OHIO RIVER VALLEY WATER SANITATION COMMISSION

RESOLUTION NO. 1-64
Notice of Intent regarding
Wastes From Boats and Floating Facilities
Adopted January 9, 1964

WHEREAS: The discharge of untreated wastes from commercial and pleasure watercraft and floating facilities operating within the Compact District may cause pollution contrary to the language and intent of the Ohio River Valley Water Sanitation Compact; and

WHEREAS: Substantial progress has been made in eliminating discharges of untreated wastes from municipalities, industries and other on-shore installations in the District;

NOW, THEREFORE: For purpose of safeguarding the waters of the District as specified in Article I of the Compact;

BE IT RESOLVED: That the following measures are hereby adopted by the Commission to be followed by the signatory states for the joint cooperative control of waste discharges from watercraft and floating facilities, such measures to become effective January 1, 1967:

1. No marine waste-disposal system on any watercraft or floating facility operated on waters within the District shall be so constructed and operated as to discharge inadequately treated wastes into these waters.

2. All marine waste-disposal systems shall be sealed or otherwise rendered inoperative on waters where use of such systems is prohibited by federal, state or local regulations.

3. On waters within the Compact District where the operation of marine waste-disposal systems is permitted, such systems on or within any watercraft or floating facility shall include a suitable, operating treatment device for the maceration and disinfection of wastes prior to discharge. In lieu of treatment, wastes from watercraft and floating facilities shall be collected in holding tanks properly equipped so that the wastes can be discharged to approved shore-based installations.

BE IT FURTHER RESOLVED: That the Commission request that each of the signatory states take steps to carry out the provisions of this resolution; and

BE IT FURTHER RESOLVED: That the Commission direct the Engineering Committee to provide a guide-line memorandum for use in implementing this resolution; and

BE IT FURTHER RESOLVED: That, following the effective date of this resolution, the U. S. Coast Guard and appropriate signatory state enforcement agencies, in connection with their routine licensing inspections of watercraft and floating facilities operating within waters of the Compact District, be requested to report to the appropriate state agency or to the Commission those watercraft and floating facilities not complying with this control measure.

ORSANCO:rb
1/13/64:50

J. Michael Thatcher

Secretary-Treasurer, Chattanooga Marine Trade Association

I believe I speak for the small boat owner, boat retail stores, shipyards, docks and marinas. And I would like to express appreciation to the National Sanitation Foundation and to the various public health representatives and manufacturers for their efforts in this conference.

Like our automobiles, our modern pleasure boats have become much more complicated. Today it is much more difficult for the average recreation seeker to own a boat. There are various registration laws and inspections for safety equipment and there is a growing problem of obtaining service for engines and other marine services. The problem of service cannot be minimized--in our area this is a serious problem for boaters, there is a great shortage of skilled mechanics because of the labor shortage--and I suspect this is a problem in other areas.

I do feel that states should provide lists of acceptable boat treatment equipment. Therefore my admonition to public health officials and device manufacturers is--such equipment should be as simple as possible, long lasting, easy to install and maintain and it should be reasonable in cost.

A question which people in my area raise is--there are thousands of pleasure boats presently being operated which are not built for or equipped with toilets and--just how do these boat owners dispose of human wastes and trash?

With regard to enforcement, as most of you know, a fire extinguisher is standard safety equipment on all boats and should not sanitation equipment fall into the same category? Many harbor masters are insistent on equipment standards for vessels in their harbors and it is my feeling that if the states will fully advise boat retail dealers, shipyards, marinas, and boating clubs of the acceptable sanitary devices, a very good amount of public cooperation will be found.

My Trade Association is very much interested in the whole problem of water pollution and our central project is publicising this problem. We are currently circulating this petition which is merely the first phase of our program on pollution:

> WHEREAS, the residents of the great Tennessee Valley have been richly blessed with one of Nature's most important resources--an abundant supply of pure, clean water, and
>
> WHEREAS, the preservation of a pure water supply is essential to the very life of our citizens, wildlife in our forests and fish in our streams, and
>
> WHEREAS, the maintenance of pure water supply is necessary to the future growth of our region and contributes to the establishment of new industry, and
>
> WHEREAS, it has been reported in many responsible national publications that the pollution of our great water resources is proceeding at an alarming rate, represents a serious threat to our health and constitutes a national disgrace, and

WHEREAS, in the Chattanooga area, qualified authorities have reported gross contamination of our creeks and the Tennessee River to the extent that the Hales Bar Reservoir is referred to as little more than an open sewer and the Nickajack Reservoir, when completed, will be unfit for recreational use,

THEREFORE, we the undersigned respectfully petition:

OUR MUNICIPAL OFFICIALS to take immediate steps to stop the dumping of raw sewage into the Tennessee River or any of its tributaries and to provide up-to-date sewage treatment and disposal systems;

OUR INDUSTRIAL EXECUTIVES to prevent the drain of chemicals and any poisonous, odorous, unsightly, or unwholesome matter or by-products into our creeks and rivers and to provide for proper disposal of all industrial wastes;

OUR FELLOW CITIZENS to steadfastly observe health, sanitation and any and all laws and regulations concerning the disposal of sewage, trash and wastes of any kind.

FINALLY, we implore our city, county, state and federal officials, our industrial executives and our fellow citizens not to be satisfied with mere pollution control, but to vigorously pursue the means to end this contamination and pollution altogether, and make the Tennessee River system the cleanest waterway in the nation.

Robert T. Linn

U.S. Power Squadron, Toledo, Ohio

I'm only here to observe and am glad to see that we are getting the people together in making strides toward a uniform regulation. We have regulations regarding safety that the Power Squadron tries to teach. We don't try to enforce them. We try to teach the public how and insist that they attempt to keep this equipment on their boats for safety sake.

I've had my eyes opened up to quite a few things today. I happen to be a boater and I do dump sewage into Lake St. Clair as the man from Macomb (county) stated and, believe me, that Lake St. Clair is pretty shallow. If you happen to get there in a good wind, you want to make darned sure that you don't get on some of those sandbars.

All I can say is this: That I hope that you make a regulation that the public can understand. And, believe me, we have a hard time teaching some of the simple ones that we have now. We teach in the neighborhood of, maybe, a million and a half people a year in 350 squadrons in the United States and we are 68,000 people strong in our membership.

Just yesterday I say a boat that, unfortunately, flew one of our flags and he did not have a chart. Now these charts you can get very readily from most any marina but if the man doesn't read it, doesn't protect himself, why he is going to be in trouble. So I think this is where we're at--that if we can just get a regulation that is the lowest standard a person can understand--and believe me, this is what we find in the squadron in trying to teach people--don't go by the high-caliber person, you've got to gear yourself to the lowest caliber or you don't get through to anybody. So, I just hope that you do come up with a regulation that we can pass on to the people. How you are going to enforce it is another problem. We'll try to do ours through education if you will make the right legislation.

Joseph E. Choate

Administrative Vice President, National Association of
Engine and Boat Manufacturers, Inc., New York

I wish to thank you for the opportunity to address you today. We at the National Association of Engine and Boat Manufacturers have been involved in meetings such as this on many different subjects since the turn of the century, and we are not unmindful of the benefits that can accrue to everyone by a free exchange of information on what the other fellow is doing.

Clean water is a prime requisite to the health of the boating industry. Every boat builder and manufacturer in our business knows that every boat is a means toward more than one recreational end. Boating people fish, water ski, swim, scuba dive and wake surf. Our customers live on top of, in and around water. Our interest in this subject is not only sincere, but vital to the economics of our industry.

Long before there were many governmental and public interest organizations interested in water pollution, our Association initiated and supported several programs to investigate and provide solutions for the treatment of wastes from pleasure boats.

Commencing in 1955, in cooperation with the New England Interstate Water Pollution Control Commission, and continuing annually for several years, joint exploratory conferences on preventing pollution of waters from marine toilets were held under sponsorship of NAEBM. The first fact of life we learned was that pleasure boats are a negligible source of water pollution compared to community sewage and industrial wastes.

This, however, did not deter our industry from going forward with a program to reduce the effluent from pleasure boats insofar as permitted by the best technology available. Our Association decided that the best route to this objective was through the American Boat and Yacht Council and the Yacht Safety Bureau. I think it is important at this point to say a few words about these organizations.

The American Boat and Yacht Council is the technical society of the boating industry. It is an independent society, made up of individual members who pay dues and who contribute their personal time and knowledge towards the development and publication of technical safety standards for the design, construction, equipage and maintenance of pleasure boats. This Council was founded by a blend of interests concerned with safety in the boating field. The interests included government, industry, insurance, general public, and education.

The Yacht Safety Bureau is a non-profit, independent organization with but one function. That function is marine product safety evaluation with respect to pleasure boating. To accomplish this the Bureau is organized to comply with Federal Codes that define non-profit laboratories "testing for public safety." From these codes stem the ground rules for the conduct of all Bureau operations, thus meeting the governmental desire to make certain that product safety evaluation services are operated in the public interest and are fair to all. In summation, the Yacht Safety Bureau is a non-profit public service agency operated solely in the interest of public safety from a product point of view.

It must be clearly understood that both the Bureau and the American Boat and Yacht Council do not express opinions on what should or should not be regulated by the government or other organizations that may have authority. But the work and cooperation of the Bureau and the Council are and always have been available to all levels of our society to aid in the formulation of regulations.

Let's go back now to the conferences on water pollution that the NAEBM began sponsoring eleven years ago. An early result of these meetings was the initiation in 1957 of a project by the American Boat and Yacht Council to develop "recommended practices and standards for sewage treatment devices for marine toilet waste, including their installation". In accordance with the general organization of the Council, a technical committee including industrial, governmental and professional representation was formed and by the time of the 1959 NAEBM conference it had developed a proposal.

That proposal was commended by the conference, and later, in 1959, it was adopted by the Council as an advisory standard. The standard, with a subsequent addition of a recommendation that boat builders allow space in the appropriate places for waste treatment devices, has since been the basis for regulations as adopted by some states, and as proposed by the National Council of State Boating Law Administrators.

The ABYC standard on treatment of waste matter is stated in terms of performance to be attained, and refers basically to devices designed to treat human waste by the maceration-chemical disinfectant method and not to devices designed for retention of waste for subsequent discharge or for reduction of waste to ash. To the best of our knowledge, there are today no guidelines in the form of advisory standards for waste control systems using holding tanks, incineration, or other concepts. The reason simply is that the maceration-chemical treatment methods have received the most attention as a way of accomplishing the objective through the years by the industry in general. Systems other than maceration-chemical treatment do involve both practical and safety problems that seem worthy of attention in the area of advisory standards in terms of performance capabilities.

It is important to bear in mind always that while we must attain the objective of satisfactory anti-pollution devices, we must maintain the safety of the boat and its occupants. This is one of the reasons that we, as an organized industry, depend on the Council and the Yacht Safety Bureau for waste treatment standards development. The bureau, which already has developed a set of testing requirements for marine waste treatment devices for confirming compliance with the performance objectives of the ABYC standard, is really doing two jobs. As a service to a relatively very small industry, it has included the bacteriological aspects of testing waste treatment devices as well as the safety aspects. In developing the actual operational testing procedure and the testing capacity, the Bureau received considerable help and guidance from the New Hampshire Water Pollution Commission.

Another reason we are working through the Council and the Bureau is our desire for fair and uniform regulation, if regulation is necessary. It would be impossible to obtain fair and uniform regulation if testing procedures and standards were not uniform. Any other alternative has built-in controversy, as well as the danger of projecting regulations that may be broadly unattainable.

The Bureau's testing procedure for waste treatment devices has been under development since 1963. In accordance with approved engineering practices, it has been continuously improved, with the latest publication of its procedure in this area dated March, 1966. It requires that installation of waste treatment devices aboard pleasure craft be in accordance with the latest revision of the applicable standards of the American Boat and Yacht Council and the National Fire Protection Association. It also requires that the effluent from the tested device must conform to the latest revision of the ABYC applicable standard. The present ABYC effluent objective is 240 ml. bacteria coliform count. There has been some controversy with some regulations calling for a count of 1000 ml. This difference, it is our understanding, is quite academic and certainly standard agreement on the point would not be difficult to reach. If the effluent requirement is changed in the standard, the Bureau's testing requirement is automatically adjusted to accommodate the change.

The Bureau's testing procedure for the class of device has been distributed to authorities in all 50 states and to the U.S. Public Health Service. There were many favorable and no unfavorable comments. In addition, to the best of our knowledge, this set of testing requirements for marine waste treatment devices is the only one in prepared form today and publicly available. We wish to emphasize that the fundamental purpose of the preparation of the testing requirements is to spell out for the manufacturers exactly what tests would be performed in evaluating their devices, and to perform those tests in the same way for all devices of the same type.

The final thought we have in making manifest the position of the organized boating industry on this subject is that our program and objective is to treat human waste originating in the boat. Sea water, which may be used as flush water, and which may already be polluted, is not part of the problem being considered.

In summation of the boating industry position, as stated by NAEBM, the following are enumerated:

1. Clean water is a prime requisite for continued prosperity of the boating industry.

2. Water pollution by pleasure craft is relatively negligible.

3. Our concern is with human waste originating in a pleasure craft.

4. The NAEBM has been actively engaged in the development of satisfactory solutions to water pollution from pleasure craft and has sought to cooperate with all interested organizations representing the public, industry and government in this work for over 11 years.

5. We have made significant gains in the development of waste treatment device standards and the testing of them in a way which we believe to be the only reasonable and feasible way, fair to all and in the public interest, and the interest of our industry.

6. We will continue to provide full cooperation to interested organizations concerned with the same problems, and we invite use of the data we have compiled and the facilities that we have available.

7. We will continue to embrace a philosophy of improvement and uniformity in testing procedure and applicable standards that have the guidance of and represent the best technological advances available, from the standpoint of public safety. This philosophy of uniformity necessarily extends to any regulations by government or its agencies.

8. We in the boating industry are ever mindful of the special environmental conditions prevailing in the sport of boating. The demands of this environment are so complex as to need the technical attention of personnel completely acquainted with those special conditions.

Ron Stone

Director, Government Relations Department
Outboard Boating Club of America, Chicago, Ill.

I am at this conference today in a dual capacity, not only as a representative of the recreational boating sport and industry but as a member of the Pollution Study Committee of the National Association of State Boating Law Administrators.

From the tenor of many of the remarks so far, at this conference today, I feel like David about to take issue with Goliath, only I have not cast the first stone.

At the outset, I want to be perfectly frank and say that my organization, the Outboard Boating Club of America, does not take a categorical position for or against regulations requiring treatment of raw human sewage in connection with toilets on pleasure craft. We think it is an improvement over the old school of thinking that boat toilets had to be sealed or plugged, which meant that boaters had to race for shore when nature called. Laws like that simply defy the laws of nature.

At the same time we think it is a gross exaggeration to regard sewage discharge from recreational watercraft as a universally serious problem warranting immediate, nation-wide regulation. True, there may be isolated problem areas on small, congested lakes and marinas where there are heavy concentrations of boats but we think you'll agree that pollution from boats is very minor as compared to untreated wastes and sewage from industry and municipalities and runoff from farmlands.

Did you know that out of 7.5 to 8 million pleasure craft of all types in existance on the waters of the United States today, there are only 300,000 equipped with toilet facilities.

So you see that the harder you look at this problem in the total perspective of water pollution, the smaller it gets.

Nevertheless, in today's mania against water pollution, we know it would be foolhardy to argue that pleasure boats are no problem whatsoever.

That is why OBCA has been glad to cooperate with pollution study committees, such as that of the National Association of State Boating Law Administrators and to assist in drawing up a practical model act to prohibit littering and the discharge of untreated sewage from boats. Moreover, we are anxious to provide uniform standards and guidelines which can be followed by every state that feels it necessary to regulate in this area.

If we must have laws against boat pollution, we wanted to make absolutely sure that they are as uniform as possible so that the boatman who is put to the expense of installing sewage treatment equipment does not get caught in the middle by conflicting requirements between the states or between the states and the federal government.

As you may know, last year the National Association of State Boating Law Administrators - called NASBLA for short - endorsed a model boat pollution act which was the culmination of 2.5 years of research and investigation by its pollution study committee. Many state public health officials have had an opportunity to review the model act. They generally agree that its provisions meet public health requirements. The U.S. Public Health Service, also, has passed upon this act.

Already this has had promising effects in putting the states on the road to uniformity. This year saw laws tailored after the model act, introduced in New York and Tennessee and under serious consideration in half a dozen other states.

I would like to take this opportunity today to give you a little background about the nature of NASBLA and of its pollution study committee.

NASBLA is an association made up of state officials responsible for the administration of recreational boating programs in the various states. This includes boat registration, boating law enforcement and the development of boating facilities.

It is an organization definitely oriented toward making recreational boating a safe and enjoyable pastime on all waters.

Three years ago, the National Association first took up the subject of water pollution because of considerable pressure brought to bear on various states for legislation or rules governing the use of toilet facilities on recreational watercraft as a way of reducing water pollution.

Frankly, most boating law administrators believed that recreational boat owners have been selected as whipping boys for pollution because they are the easiest target. By regulating them, legislators can tell their constituents back home that they are doing something about pollution. In any case, it was felt that a full-scale investigation of the extent of pollution attributable to recreational watercraft was necessary. That is how the pollution study committee came about under the chairmanship of Keith Wilson, director of the Michigan Waterways Commission.

Initially, the committee decided that it would attempt to uncover any and all studies on pollution attributable to recreational watercraft, to determine conclusively the extent of such pollution. After contacting one or more persons in public health and water pollution control in every state and the appropriate agencies of the federal government, the committee uncovered only two reports dealing even remotely with this problem.

One was a study of houseboats in the Portland, Oregon area and the other was a study of recreational boating pollution on Lake St. Clair and in Macomb County, Michigan, which you heard about earlier today. Both studies not only failed to establish significant pollution from recreational craft but apparently established just the opposite, precisely the conclusion anticipated by the majority of boating administrators.

Two reports not being considered enough, the committee next circulated questionnaires throughout the country asking upwards of 200 pollution specialists, in and out of government, for a subjective opinion on the nature and extent of pollution from recreational watercraft on waters within their particular areas. The response to the questionnaire was very gratifying and established to the committee's satisfaction that pollution from this source is regarded by pollution experts as almost negligible compared to other sources of pollution.

These questionnaires did, however, point out considerable concern over the littering of our waterways by not only recreational boat owners but by crews of commercial vessels as well. In fact, it became the unanimous conclusion of the committee that this problem - the indiscriminate dumping of bottles, cans, paper and other trash and garbage overboard - is of much greater proportions and concern than the problem of venting untreated sewage through boat toilets.

In any event, NASBLA's pollution study committee decided that even if all the evidence mollified charges of pollution from recreational watercraft, it would be going against the growing current of public opinion against water pollution to resist any kind of regulation.

Keeping in mind the slogan, "If you can't beat them, join them", the committee decided that the best thing we could do would be to propose model legislation on this subject which would most directly protect and benefit recreational boatmen, while still meeting the desired goals of health officials.

Basically, the model act prohibits the discharge of inadequately treated sewage from boats or the abandonment of containers of such sewage anywhere on or near the water. Use of boat toilets is conditioned upon having the toilet equipped with an approved sewage treatment device.

The act recognizes three principal types of devices now on the market: the macerator-chlorinator, holding tank systems and incinerating devices, provided appropraite instructions on installation and use are followed.

More exacting standards are provided for chlorinators than holding tanks or incinerators inasmuch as the chlorinators are designed to permit discharge directly into the water.

The problem of litter is attacked by two methods; one by penalties and the other through authorization of a vigorous educational public relations program.

Marinas come in for a share of regulation too, by being required to provide convenient onshore trash receptables.

We believe the standards in the model act will stand up under close scrutiny. Several states, including New Hampshire, New York, Minnesota and North Carolina, have conducted or sponsored laboratory or actual on-the-water use tests of sewage treatment devices for watercraft and several of the units tested have been found to be effective in treating human sewage in line with the standards of the model act.

As a matter of fact, the requirement in several boat sewage treatment laws on coliform reduction in treated effluent is somewhat higher in NASBLA's model act - 240 mpn per 100 ml, as compared to 1,000 mpn in the model act - and the treatment devices tested have been approved as capable of meeting the higher standard.

One thing we are happy to note is that public health and water pollution control officials of several states have shown a willingness to recognize the findings of tests, conducted or sponsored by their counterparts in other states, on these sewage treatment devices.

We were concerned that each state would insist on its own testing, subjecting manufacturers to the hardship and expense of going through 50 different labs. To get around this problem, the pollution study committee inserted a provision in the model act which says, in effect, that if a manufacturer has had his product tested and approved in State A, as meeting the standards of the act, he shall in applying for approval of State B, submit a certified copy of the test report and that report will be a factor in approval by State B.

The question arose whether the qualifications and procedures of testing laboratories should be spelled out in the model act. Immediately, this posed a dilemma for us. For one thing, the legal problem in designating any private, nongovernment testing lab in the act is that you run afoul of an unconstitutional delegation of government authority. For another thing, spelling out testing procedures can become very limiting as time goes on and technology advances. The pollution study committee, therefore, decided these were areas best left to regulation outside the act - regulations to implement the act.

In conclusion, I just want to say we are encouraged that the U.S. Public Health Service and the Tennessee Valley Authority, in connection with the National Sanitation Foundation have sponsored this conference to establish a natio testing and certification program for pollution control devices used on watercraft. The way we see it, the results of this conference - if they provide testing labs with uniform methods and procedures for certifying effectiveness of sewage treatment devices that can be recognized from state to state and by the Federal Government - can only accelerate the acceptance of NASBLA's model act and give us the uniformity which we so desperately want and need in this area.

Thank you.

Tom S. Gable

National Sanitation Foundation

I think it is well at this point that we clarify the Foundation's role in not only this meeting but in any subsequent developments that may take place. This in order that all be thoroughly acquainted with the Foundation methods, procedures and philosophies.

I should like to call your attention to the booklet entitled "Basic Facts About the National Sanitation Foundation". Many of you may have in your minds questions relative to the Foundation's purposes, basic concept, corporate structure and the like.

These common questions and others are answered in this publication.

The Foundation's primary role in any standards or criteria development is to provide a mechanism, a forum if you wish, wherein all parties concerned, individuals, groups and organizations, can meet together, put on a second hat, and meet on a common ground to define the problem, (which is what we are trying to do now), to review the facts and scientific information that is available regarding the problem, (which we will do shortly), and then seek a logical, practical, realistic solution to the problems, based upon the available facts or on those ascertained through subsequently initiated research.

Let me emphasize that the Foundation will not proceed in any program until all concerned parties are willing to proceed; this means, in this instance, the public health and control agencies, the manufacturers of the equipment and the users. This is a basic premise in all Foundation standards development programs. We must have the cooperation of all concerned.

The Foundation itself does not write standards. Mr. Farish, Tom Gable, Dr. Vaughan -- no one on the staff writes standards. We provide a mechanism. We serve to coordinate and collate the facts in preparation of the criteria or standards.

We, as a Foundation, do not write standards. They are your standards -- you the user, manufacturer and the public health and control agency.

To accomplish this, and to make sure we don't write the standards, we have established a mechanism called Joint Committees, or Advisory Committees, whose members are from the interested professional public health and control organization, industry, manufacturers and from users' groups.

To amplify this a bit, I would like to direct your attention to another publication entitled "A Program of Standards, Evaluation and Approval of Equipment." Inside you will see a typical Joint Committee structure. The Joint Committee structure shown is the one that deals with food equipment. Thus, the members of professional organizations represented hereon would not be typical for this group. The various professional public health groups, the Conference of State Sanitary Engineers, the Conference of Municipal Public Health Engineers, National Association of Sanitarians, and so on, are represented. You will note that the Armed Forces and other U.S. government agencies concerned with food and food equipment are represented.

You will note that on the Joint Committee for Food Equipment Standards that the Food Facility Engineering Society and the International Society of Food Service Consultants, professional design groups, are represented. Further note that users' groups such as the Veterans Administration, the National Restaurant Association, the ADA are represented. Manufacturers' indicated as "Industry Advisory Committees", which include the manufacturers of the particular equipment under consideration, are likewise members of the Committee.

This Joint Committee develops standards as a group, through group judgment and group decisions. At times, it is necessary that certain specific aspects be further studied or reviewed by a small, technical task committee. Notwithstanding, that task committee must report back to the Joint Committee with their recommendations and the over-all group makes a final decision: Is it or is it not satisfactory or adequate?

Once the Joint Committee has generally concurred -- and let me hasten to say that we do not like to take votes on Joint Committees, we would much rather resolve the problems to a common understanding and acceptance of the criteria or requirements set forth in the standard.

I should like to emphasize that these are public health standards. They are aimed at establishing minimum public health standards and thus far have been successfully oriented to this end.

At the time there is general concurrence in a standard by the Joint Committee, the Committee recommends adoption of the standard. Note that the Joint Committee, in itself, cannot adopt a standard. This was done for a very specific reason and it was part of the 1948 Clinic recommendation, where in the standards development mechanism was set forth. This is described in the schematic structure set forth in the previously referenced publication entitled "A Program of Standards, Evaluation and Approval of Equipment". You will note, in the upper right hand corner, the "Council of Public Health Consultants". These are 25 of the top environmental health and public health persons in the country who serve as the top advisory group to the Foundation

Once the Joint Committee has recommended adoption of the standard, it is sent to this Council for review and final adoption. What does this do?

Number one, it places the public health standard in a position of having been adopted by public health people. Industry does not ballot on the final adoption of the standard. This, we think, is good because, in order to gain acceptance by public health people, it must be a true public health standard. We have been told by many industry groups that they do not want to vote or ballot on standards to which they are going to submit their products. They want an objective and defensible standard. However, should the Council find that the Standard fails to provide for minimum public health requirements, they cannot change the standard. Rather they must refer it back to the Joint Committee for clarification or correction. The final implementation of the Standard is by the NSF Board of Trustees. This membership of the Board of Trustees is set forth in "Basic Facts about the National Sanitation Foundation." Generally spoken the Board is equally divided between public health and industry representatives. The Board of Trustees authorizes the Testing Laboratory, a totally owned subsidiary of the Foundation, to proceed with an implementation, evaluation and approval program.

It should be noted that until there is such a standard, or criteria, which has been developed following this procedure and has been formally adopted, there can be no evaluation and approval program. We have had some of the manufacturers present in this room today come to us in the past, asking us to evaluate and approve their product. We cannot do it and will not do it until we have a formally adopted and promulgated criteria or standard.

Now, there are some who will ask, "Does it work? Does this methodology work?"

I can only point to the successes to date of the NSF Standards and Seal of Approval program.

Presently, as Mr. Parish indicated, we have nearly 1,000 companies who are participating in basically three different areas and have listed over 15,000 items or products. Our listings', which you may have seen before, includes one covering food equipment; a second one, plastics for potable water application and for drain, waste and vent application; and, lastly, a listing covering swimming pool equipment.

Once the standard is adopted, it has no meaning by law; it is not a legal document. It is available to the public. It is a voluntary program. The manufacturer must elect to submit his product for our evaluation and approval.

The Testing Laboratory does not go out in the marketplace without the manufacturer's consent and in fact request us to evaluate his product. On the other hand, it is also voluntary from the standpoint of acceptance and adoption by control agencies -- public health and so forth.

That this has been successful and is widely used is evidenced by a survey conducted about three years ago which, at that time, indicated that over 90% of the population of the United States was served by health agencies using the food equipment standards.

In the plastics field, over 65% of the population was served by agencies using the nSf Seal of Approval. In the swimming pool program, which was just under way, barely a year old, there was a very limited number of health agencies using those standards. I hasten to point out that as of this date, it is estimated that the percent of population served by agencies using NSF Standards is well over 60%.

That this methodology is evidenced by these facts. We hope and we strive in each instance to develop performance standards or performance criteria. It is not always possible to do this to the desired degree because of the complexity of writing performance test procedures. Further there are times when you must include, in part at least, specification as well as performance requirements.

So, NSF Standards are in most instances a combination of specifications and performance requirements.

It is hoped that this discussion has helped to clarify for you how the National Sanitation Foundation operates, and its function. In summary: (1) the Foundation is here to provide a mechanism, a forum for all concerned to meet together on common ground; (2) to define the problems; (3) establish the facts and; (4) seek solutions to the problems.

The National Sanitation Foundation is interested and concerned with minimum public health standards which are developed through cooperative action. It provides a mechanism for the adoption of public health standards by public health people, yet with the participation in their development by other concerned and interested groups.

Lastly, the National Sanitation Foundation does provide the one thing to which reference has been made several times this morning and this afternoon -- a national uniform evaluation and approval program through an objective third party.

Thank you.

Fred Stone

Sales Manager, Monogram Industries, Los Angeles

Our company has been in research and development of sanitation equipment for the past 10 years, starting with the development of the recirculating flushing toilets for all the DC-8's--everyone in the world--and the 707, Convair 998, 80 and the Lockheed Electra and the new 737 Boeing short range aircraft.

These items are quite expensive and run in the $2,000 range and for the past six years we have been trying to develop this basic piece of equipment for boats and travel trailers and we finally have accomplished this fact. We now have a piece of equipment that will hold the waste. For example, we have a piece of equipment now that charges with only four gallons of water, fresh or salt. You then can use this toilet, that is sitting over here on the floor, 80 times on the same four gallons of water with one 7-ounce bag of our chemical. Eighty usages is a family of four people, five full days, using it 24 hours a day. With test boats that we have run, out on the Pacific coast, we have run with the average of four people, three weekends doing this because most boat owners are not using the toilets 24 hours a day on their boats. So we have gotten as much as three weekends on the same four gallons of water out of this toilet.

Now, in inland lakes, such as in Wisconsin, Minnesota, North Carolina, Kentucky and Tennessee, areas like that, the dockside pump station is a very important part of our program.

Wherever you have laws, such as in Wisconsin, which say that there shall be no discharge of any kind, you get pump stations and you get as many as you need. In Wisconsin, today, we have as many as four or five pumping stations going in a week, on the St. Croix, down the Mississippi, in the Wisconsin Dells, Lake Winnebago, Lake Windota, and Lake Winona. In Minnesota, we have a similar situation. We are getting pumping stations on Lake Minnetonka--we have them now on Milack Lake. We have them at Stillwater on the St. Croix. We have them at Prescott, Sunnyside, Ashton, Red Weing--all the way down to Dubuque, Iowa.

That is a funny thing because when I first went around to these different health departments and told them of our fine idea, they said, "It's a fine idea but it'll never work because there are no such things as pumping stations. Where will they discharge?"

It will work. It will work on inland waters and it will work on coastal waters. This piece of equipment, as you will see on the floor over there, holds the waste until such time as this boat enters the fuel dock and when it enters the fuel dock, at the same time it is getting gas, the waste is ejected in less than a minute by a quick disconnect, simple, one and one-half inch standard thread fitting on the boat. This has proven out in the last two summers on the Fox Lakes in Illinois where there is a heavy concentration of boats; there is no discharge law of any kind and we now have, where we started with one pumping station, in the first summer, there are now eight. All the major marinas on the chain of lakes are now equipped with this dockside pump.

In Mississippi, on the Pearl River reservoir, we have five--there will be six by this spring--pumping stations. Again, no discharge of any kind.

Upstate New York, on Lake George, no discharge; we have pumping stations.

In New Hampshire, now, all the major marinas have switched over to the pumping stations and the holding equipment. Our early equipment was the holding tank, 10 and 20-gallon, which was good for about 50 uses. Now, we have a piece of equipment, only eight gallons, and it is good for 80 uses, reusing the same waste matter.

I would say that the situation in Wisconsin should help to prove our point that, with the proper pump-out facilities, you can have self-containment. We now have Union Oil in Southern California--we are negotiating with them now--and we expect that by this summer they will have pumping stations in Southern California marinas.

Pier 66, which is the most well known marina in the United States, has agreed to put in their first pumping station down in Fort Lauderdale.

We now have three of the major marinas on the New Jersey coast on the inland waterway from New York to Florida that have signed up for the pump stations. So this program is developing.

This unit is here for your inspection and anybody that cares to look at it during the course of this afternoon or evening may do so.

One problem that might create quite a bit of controversy is that these laws, as they are being written, say that treatment devices will be approved and holding tanks will be approved--but there is no holding tank when there is treatment. You have to decide which way you are going to go because a marina operator is not going to invest the money in a pump-out station when he knows he can sell treatment devices. We found this and I have spent three years talking to every major marina area in the United States. I know that is going to create a lot of thought. But where you have laws that say you will not discharge, they will use incinerator types or burner types or hold or retention whether it be our equipment or somebody else's. You will have all the pumping stations that you will ever need and that will be on the coasts as well as on inland waters. And we hope that Wisconsin will prove this summer that a nation under terrific pressure from all over the country to approve treatment devices. And we hope that Wisconsin will prove this summer that it does work, that you can keep all wastes out of the water.

Now, if it comes to pass that there shall be treatment devices, we have a chemical that we put into this device that will treat it less--and a great deal less--than 240 mpm, but we don't want to do this. It is not what we stand for. It is not what we worked for. But if it will have to be, we will sell it as a treatment device. We hope that we won't.

Thank you.

Gordon W. Crowell

Vice President Engineering
Raritan Engineering Company, Millville, N.J.

I have just had notice that I was to speak and I have here only some notes on which to draw.

First of all, the Raritan Engineering Company is among the manufacturers that have made chlorinator-agitator, -blender type of device. Last year, we also brought out on the market a new unit - I distributed some of the literature around - called the "Crown Head", which is working on a different principle than the well-known chlorinator.

The idea behind it all was the recognized fact that the boats which are in the greatest number are the smaller craft and these are also the craft that have the least space available. Our idea was to design a unit which was small enought to fit practically any boat that would have a head on it at all and even on boats that do not have room enough for the electro-chemical chlorinator which is an adjunct to the standard type of marine toilet.

The principle of the "Crown Head" is:

Number one, very fine and very positive maceration. It works on the principle very similar to a garbage disposal unit in your home. At the same time, a number of state agencies indicated that they wanted a unit that would give the boat owner a positive indication of when the decontaminating agent was exhausted; in other words, a unit that would become practically inoperative as soon as he ran out of decontaminant. This presented, of course, quite an engineering problem. We solved that in this way: we had two pumps on the "Crown Head"; one, as an inlet pump which draws in sea water and the other, as an outlet pump which discharges the effluent after it has been macerated. Connected to the inlet pump is a metering valve which goes to a little tank of concentrated decontaminant. When that tank of decontaminant is exhausted, this metering valve sucks air and destroys the effectiveness of the incoming pump by admitting air into it so that, while it doesn't completely lose its prime, the flushing action of the toilet is certainly most inadequate and it should be obvious to anybody that he has got to fill up his decontaminant tank.

Now, of course, you run up against the old problem that you can make something foolproof but it is pretty hard to make it damn foolproof, but this is the nearest approach that we have been able to get to it.

Also, some may view this as a disadvantage and others may view it as an advantage, according to how you stand. We do not use sodium hydrochloride or "Chlorox". This, in one way, is a disadvantage as the decontaminant which we use does not have the universal distribution that "Chlorox" has, which you can buy in any food store anywhere. But we are using a brand new substance for this application.

It is a quaternary ammonium chloride. It is a very, very concentrated material and has the property of being an extremely effective decontaminant. It is also used industrially in a number of personal deodorants and in some types of face soap - in very small quantities, of course, but it is primarily an extremely powerful disinfectant. It also has a quality which we feel is very, very important - which is called substantivity. In other words, when this disinfectant is brought into contact with the effluent, it has a penetrating quality and it tends to cling to any organic matter with which it comes

into contact, which means that it is very effective in continuing the decontamination even after the effluent has left the boat. This is a rather difficult thing to prove but we have it on the certification of the manufacturers that this effect, nevertheless, does obtain and it is exceedingly effective long after the effluent has left the boat.

As you can see from the literature which I distributed earlier, from the exploded drawing of the "Crown Head", considerable electrical power is used in operating it. It takes, at 12 volts, approximately one-third of a horse-power to operate it effectively.

The unit is comparatively new in its method of decontamination and we think that it is the most effective method so far employed for marine decontamination.

We also are among, I think, all the manufacturers who are extremely concerned with the difficulty of obtaining approval of any unit by any state health agency. So far, apparently, it is just a matter of opinion here, there and everywhere as to what will be accepted and what will not.

I think it would be worthwhile to mention, perhaps, our own viewpoint in this regard. Untreated sewage has contamination in the coliform count, I understand, in untold billions, that is, it is uncountable.

Even though a good many of the units available today do not come down to the 240 coliform count, or the 1,000 coliform count - except under very carefully controlled laboratory conditions, which are not realistic in the field - I think it fair to admit - I don't think that the average unit, under average usage is going to meet this 1,000 coliform count by a long shot, unless the substantivity effect is taken into consideration. In other words, when you make a laborstory test, you neutralize the effluent immediately so that the decontamination stops. In lots of ways this is not duplicating the effect in the field. So, the method by which decontamination is tested is open to a great deal of discussion and, also, opinion. So, therefore, I would say that, while it is extremely difficult to say that you reduce the contamination by 99 percent, you say "Percent of what? Percent of untold billions?"

If you bring that contamination of infinity down 99 percent, you still have infinity, mathematically. However, if you bring this contamination of untold billions down to, shall we say, 100,000 coliform count, everybody throws up his hands and says,"One hundred thousand! This is nowhere near 1,000 that we are shooting for!" But, at the same time, it is reducing the contamination a considerable amount and in lots of cases, I am convinced, you are probably discharging into the water, water which is less contaminated than you are sucking into it to flush the head.

I have used this expression before: It seems to me that some of the public health agencies - I know I am going to get somebody's dander up when I say this - are more concerned about the affluence of the boat owner than the quality of the effluent from his boat. It seems to me that they figure - and it has been said here before, today - that the boat is a beautiful target. There is this guy out there on a boat and they have drinks and everything else and, of course, everybody runs to the head and they argue that the whole harbor is going to be filled up pretty soon with this stuff. But at the same time, if you carry the same reasoning to the absurd, you get to the position where they expect the effluent from the boat to be purer than the surrounding water he is pumping into it and they are going to start to say, "Well, why doesn't everybody flush the heads all the time and we'll clean up the whole harbor!"

Our feeling on the whole situation is: If the public health agencies will only give the manufacturers of the devices we are putting on the market - we and others, too - a little encouragement to say that, "Well, yes; this is not the greatest that ever came along but, at least, it is a step in the right direction" and say, "Five years from now we'll appraise the situation and tighten up the standards a little bit." But, in the meantime, if you can't get five, take two - if you see what I mean. In the meantime, give us a little encouragement to continue our development of these devices and I am sure that the manufacturers, with that encouragement, in time will come up with something that should satisfy anybody so far as contamination is concerned and that is what the manufacturers need, I think, right at this point - the encouragement that their devices will be accepted for the time being. After all, Henry Ford did not come out with a V-8 when he built his first car. And that's about the position that we're in - and I trust that when the laws are finally gotten into form, they will take it into consideration that they can expect consistent improvement from the manufacturers.

W. J. Bailey

Assistant to the General Sales Manager
Wilcox-Crittenden Division, Middletown, Conn.

As a manufacturer of marine equipment for the pleasure boat industry we look with alarm, the equal of health authorities, at the pollution of our country's waters. We are alarmed as citizens by the health hazard and the spoilage of natural resources, but as manufacturers of marine products we are also concerned about the damage to boating as a sport and recreation if good clean water does not remain in abundance. Foul water will be detrimental to recreational boating, consequently business and industry will suffer.

Boating actually contributes a minimal part of the pollution problem, but because it is a sport that cannot thrive where pollution does exist, the boating industry without benefit of government grants, municipal facilities, and in many cases without compelling legislation, has been attempting to do its share to keep the waters clean.

This desire to support a clean water program is what prompted our company ten years ago to develop and produce an anti-pollution device. To be sure the facts of life were pointed out by several state agencies, and a good measure of our success was attributable to their fine cooperation. Inasmuch as there were no standards or general legislation for small boats with respect to sewage control, and accordingly no great market subsequently generated for an anti-pollution device, our original intentions then, as today, were to make available a product that would, for all practical purposes reduce the small boat pollution donation by 95% or more. Ninety-five percent may be short of perfection, but if all contributors to pollution, and you know them better than I, would do as well, our national water picture would assume a status equivalent to that of 50 years ago. And, I do not think we would be here today to discuss legislation or standards, that if unrealistic when finally determined, could spoil boating while hardly getting at the real culprits of river and stream pollution.

Aside from getting a 95% improvement in effluent we also worked toward the end of producing a unit that was in the true sense safe, economical, and generally practical. Obviously if it did not meet these standards, the number of boat men that would use it would be severly limited while man's natural functions continued unabated and unregulated whether on the water or at the shore line.

I think that before we all sit in council here, and attempt to find a standard that, if applied across the country, would set a precedent for pollution control, we must use as a common denominator - REALISM - an essential to any philosophy. In being realistic we must first agree that people not boats, cause the pollution. A rule, a standard or a law demanding no toilets, toilets with devices, not readily available, devices economically or otherwise not feasible, effluent purer in many instances than the water into which it is discharged, may satisfy the long range intent of this group in theory and on paper. Unfortunately, this type of standard would, I fear, drive the bashful boatsman off the water and the more dedicated, into the watershed bushes or other ingenious means of doing what comes naturally.

In line with our philosophy I would plead that we establish our objective of clean water around some common mutually agreed upon facts.

Facts:

1. I, like many others here, am not a bacteriologist or sanitarian, but I do have an interest in boating and an interest in better boating water.

2. People contribute to pollution, swimmers, fishermen, campers, etc., not only boatsmen.

3. If all people employed apparatus that directly or indirectly would reduce coliform count by 95% or more, pollution from human waste would be practically unknown, inasmuch as nature could then handle the situation.

4. A curve drawn to denote coliform kill starting at no treatment and running to 100% kill would be asymmetrical, never quite reaching 100%. A curve drawn against this to represent equipment cost, in relation to effective kill, would go from zero dollars at no treatment point to unrealistic at better than 99%, and infinity from there on, although still short of 100%. A curve placed against these two to indicate participation by equipment purchase, would obviously drop off badly when it reached the point of unrealistic equipment costs.

5. If Professor Ingram's findings in 1955 that an everage of 305 million coliform bacteria existed per gram of feces is an agreed order of magnitude, and a coliform count of 7,000 per 100 ml. still represents a 99.99% reduction, perhaps this figure could be kept in mind when aiming at 95% reduction.

6. By considering facts 4 and 5 above for a standard that encouraged realistic and practical equipment that could give 95% reduction and be used by a vast majority, wouldn't we be getting close to our goal?

In my opinion, a standard based on 95% reduction with available equipment, used by the majority of boaters, would be a start toward cleaner water. Better devices would follow through the normal exercise of free competition and greater use for social conformity.

The above would not be a panacea for pollution simply because boating contributes only a minute amount. It would be a good start because the smallest group of contributors would be taking the greatest action for cleaner water.

So, I think, without pitching our unit, that we have acted as a responsible manufacturer in producing a unit that can be employed on most boats. As a company, we supported the boating industry that has been working toward better water, the ABYC and the Yacht Safety Bureau and, quite obviously, by being here we are supporting as best we can everybody else that is interested in clean water.

Thank you.

E. Bayne Blankenship

President, Research Products Manufacturing Company, Dallas

We manufacture electric incinerator toilets, which are shown here in this color pamphlet, and like everybody else, I really don't know what I am doing up here because the power requirements in these electric units may limit their uses to the larger boats, since the minimum power, as you can see on these, is about 2,600 watts. But on the larger boats we think that we have a place to go because, fortunately, we don't have any dumping overboard, in other words, the incinerator toilet incinerates the waste completely, so that there is no effluent and there is no water used. These are waterless units. The application of heat through the means of an electric heater evaporates the urine, dehydrates and decomposes the solids into an ash. And you have, approximately, one teaspoon of ash per fecal deposit. The ash is accumulated into an ash pan which is emptied after, say 30 fecal deposits and from 100 to 200 urinal deposits.

So in our case, we don't have the problem of coliform count. We just burn it up. It is just too bad we can't install the unit in small boats.

The Incinolet is made in a variety of models as you can see on this pamphlet here. We have waterless urinals, waterless toilets and we have in process a garbage incinerator, electrically operated, which also, like most of these models, are odor free and smokeless.

On your larger boats, as the public health people will note, there are problems on your commercial boats, dredges, towboats--and the sort of head that goes into your marinas--Incinolet is a solution because all you need is a source of electric power which, normally, you have in a marina. You can provide toilet facilities within 200 feet on right of dockside if you wish by running some power lines. These units are Underwriters Laboratory approved and CSA approved, at least most of them are.

The location of these facilities is not a function of shorelines. Now, they might handle other water wastes but, as I get it from what has been said here, this is not really so much of a problem. That is to say, these units do not handle shower waters or that sort of thing.

One thing I want to emphasize about the Incinolet unit is that it is a complete disposal unit. You don't have to do anything to it other than use it and, occasionally, empty an ash pan. The ash is innocuous and odor free. Since the ash is essentially inorganic--that is to say, whatever can be burned in it, has been burned--you can do with the ash whatever you want to. It does not make particularly good fertilizer.

I might add, too, that the installation of the Incinolet is a matter of putting a building around it and a floor and you have a toilet facility.

So, as you consider the problems, other than the small boats, as you consider the allied problems, here is a solution that does not require a whole lot of determinations, in terms of testing and so on. This may not solve all your problems but you should consider Incinolet for other possible problems.

Thank you.

Donald P. Frankel

President, LaMere Industries, Inc.
Walworth, Wisc.

My friend, Bayne Blankenship, just took a lot of the burden off me. I had a three-hour lecture prepared and now I can cut it down to about 30 seconds.

We build the Destroilet gas-fired combustion toilet. It is a little bit different from Bayne's device. His is completely electric. Our incineration is completed by direct flame impingement on the waste loads. I think of interest is the fact that we do not consider that we build a toilet. We build a complete, fully automatic sewage disposal plant in a package which is 23-by-19-by-15 inches. There is one sitting over there. This is a live unit - I can lift it up and carry it around. If you would like a demonstration after the meeting, I would be glad to put one on - with certain limits, of course.

I agree with Bayne. We have a total oxidation process. We take organic compounds of the human waste and completely oxidize them with a 2,300 degree Fahrenheit flame, thus rendering them inert. I still maintain that we reduce them to inorganic compounds. As a matter of fact, I have never yet heard a public health sanitarian or the like ever take any kind of contention to the fact that these ashes may be dumped in the water. No pollution problem exists after they have gone through our device.

I wish to make a point that there is nothing to empty per se. In the reduction of the human wastes, it is said that if all the fly ash is driven off and complete combustion takes place, there is approximately one pound of inert waste material left in one year's amount from one human being. That is a very small amount. As a matter of fact, we reduce so completely that we do not have a clean-out door. It can be taken out with the fingers, believe it or not. This is like a gravel or ash as you would have in your driveway.

I am going to complete my three-hour lecture at this point. There is nothing further to say except that if you are interested and have any questions, I would be glad to answer them after the meeting.

Thank you very much.

William Neale Roach

Carlson and Son, Inc., Metuchen, N. J.

At the outset, I would like to express our deep appreciation to those who head up the sponsoring groups for this meeting. We are most grateful for the invitation to be here and we are sure we will gain a lot of knowledge from it.

Permit me to take you back briefly to this morning. In his opening remarks Mr. Goodman demonstrated some pangs of conscience at having forced some of us to travel on a holiday. At noon on Saturday, I left Miami Beach by automobile; I arrived in Washington, D.C. at 1:00 A.M. yesterday. I had a catnap, spent four hours in my office and caught a 3:00 o'clock plane into Willow Run. I arrived in plenty of time to get a good night's rest but, being stupid, I sat up talking most of the night. I can't blame Mr. Goodman for that but I did want Mr. Goodman to know that I think highly of his meeting, in spite of the difficulty in getting here.

After having listened to five very capable representatives of five excellent manufacturers, you would assume that I would have the advantage and would bring on the fireworks and show what a great man we are. But I don't intend to do that because, while we had 48 hours notice that we would be called upon to say a few words about our products, we had determined that our visit here would be in the spirit of teamwork and team play. I say this with sincerity--that we want to be on this team of fighting water pollution as it is created by watercraft. Now, it might be that we are not qualified to be on this team but we hope to glean through these meetings some information as to how we might qualify. I want to emphasize our desire to be part of the battle against this poisonous pollution that is destroying pleasure spots of this country.

When the great campaign to clean up all the wastes from the industrial plants and communities has proved to be successful but the marinas and the harbors are still polluted by watercraft, then the battle against water pollution is still a failure.

With this thought in mind, seven years ago or more, Carlson and Son started working on a piece of equipment which we now call the Mark V macerator-chlorinator sewage management system. Some of you may be familiar with this equipment. It has had considerable usage. It has already been accepted or approved by several states.

More than three years ago, the Federal government asked us to develop a system suitable for vessels and this we have done--I might say, with our own resources and with our own good American sweat. We call this new piece of equipment the Mark X sewage management system for vessels. The Mark X unit has been tested for over a year by the U.S. Navy and Coast Guard. The Coast Guard has done considerable in-use testing; that is, it has been installed on vessels and, so far, the results have been highly pleasing and, in some cases, exceptional.

Now, of course, the Mark X is also a chlorinator-macerator type of system. It weighs only 850 pounds and requires very little space for installation. In other words, it would take up very little cargo space.

You will notice on our brochure that we claim to be the pioneer in boating and vessel pollution control. Again, I repeat, I am not going to go into detail or get into the techniques or the technicalities of this equipment. It is fully explained in the brochure. But I do want to emphasize that when we use the word "pioneer", we have a right to do it. I also want to emphasize that we do not intend for one minute to imply that we know it all, far from it. And that's the reason we are here. We hope to be able to visit with all of you. We hope to be able to learn a lot and I am sure that we will. Our system may not be the answer. We think that at the present time it is good and we have proof that it is acceptable in many areas. But this may not be the answer. We want to work with whatever groups will work to try to come up with the right answer and uniform laws and regulations.

If, in our two-day stay here, we might be able to impart some little knowledge to you, we will be thankful that we came.

Thank you very much.

Sidney Krakauer

Vice President New Products
Pall Corporation, Glen Cove, L.I.

I think that what you have seen here today on the part of industry should assure public health officials that there are many manufacturers ready and willing to produce the kind of equipment needed to meet most any level of small craft sewage control. However, it is important to note that, except the Pall Corporation, none of the manufacturers who have addressed us are normally concerned with sewage treatment except for shipboard and particularly for small craft.

Many of us in the sewage treatment industry who have built land based sewage plants throughout the country, would invest our money and talent in the small craft sewage market if we could espy a clear definition of the problem. We are, for instance, not certain that public health officials are agreed that small craft should be required to macerate and chlorinate or merely store and carry back to shore, nor can we determine whether public health officials want clear effluent or pure effluent and if the latter, what they consider an acceptable level of purity.

We are quite well convinced within the industry that sewage can be treated aboard vessels, both large and small, that it can be discharged and discharged in a manner no different from, certainly of no lesser quality than, is being required of land based operations. We don't expect anybody is going to ask more than that of boat owners. It would be unreasonable to do so. Such units are available in laboratories today, but nobody is asking for them to be produced. What I mean to stress is that the standards alternately being proposed to us today by public health officials are lesser standards than we are capable of providing. We, therefore, are concerned about investing our development money in the directions of proposed standards which are below achievable level only to find the standards changed when product reaches the market.

Boat and boat accessory manufacturers are attempting to meet whatever minimum standards will be required. However, it is evident that they approach the subject as the encumbrance it is to their industry. It would appear from today's comments that they are in no way convinced of the requirement with which they have been burdened. We in the sewage business, however, are most interested in this extension of our art and livelihood and will approach this market with vigor. We believe that sewage treatment can be made available at any level set - including equipment to simply "store for shore". But the primary need for industry to proceed with process and equipment is to have the requirements - even if multiple - stabilized and fixed so that reasonable assurance of market is visible.

We hope that someone - such as this Foundation or the state agencies - will shortly present to industry a clear set of specifications stating what is sought as a goal and what is required as minimum. With such in hand, I am certain that American industry, with its appetite already wet by this massive market, will perform to the satisfaction of the regulatory agencies as well as to the satisfaction of the boat owners and builders.

NATIONAL CONFERENCE ON WATERCRAFT WASTE DISPOSAL

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